

# JOURNAL OF THE American Veterinary Medical Association

FORMERLY  
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## CONTENTS

EDITORIAL .....	1
PAPERS, ETC.:	
The Tuberculin Test—G. E. JORGENSEN.....	4
Tuberculin Test—C. C. WALKER.....	5
Tuberculosis Eradication in Pennsylvania—T. E. MUNCE.....	14
State Law Relative to Physical Examination of Cattle—V. A. MOORE.....	20
Future Veterinary Corps of the Army—MAJ. C. D. MCMURDO.....	30
Contagious Abortion Disease—G. A. DICK.....	33
Special Report on Histo-Pathology of Glanders—CAPT. HADLEIGH MARSH.....	40
Veterinarians Should Advocate Humane Methods—W. G. HOLLING- WORTH.....	47
Present Status of Hog Cholera Control—A. EICHORN.....	51
Studies on Anthelmintics—M. C. HALL.....	59
CLINICAL AND CASE REPORTS:	
An Estimate of Number of Cysts in Case of Pork Measles—M. C. HALL.....	71
Iris Poisoning of Calves—E. A. BRUCH.....	72
ABSTRACTS .....	75
ARMY VETERINARY SERVICE .....	83
ASSOCIATION NEWS:	
American Veterinary Medical Association:	
Rates for the New Orleans Meeting.....	91
Routes Available .....	92
"Opera Francaise de la Nouvelle Orleans".....	95
Partial List of Papers, etc., for New Orleans Meeting.....	98
Records of Service Desired by Secretary Mayo.....	100
Other Associations .....	102
COMMUNICATIONS .....	111
NECROLOGICAL .....	112
MISCELLANEOUS .....	114

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OCTOBER, 1919

No. 1

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**LET US HAVE A ROUSING SOUTHERN MEETING.**

The 56th annual meeting of the A. V. M. A. will soon be upon us. In forty-eight days the veterinary forces of the United States and Canada will foregather in the metropolis of the South for the second southern meeting in the history of the organization. That they will be welcome, is a foregone conclusion, as such an event has been looked forward to with pleasure for, lo, these many yeears; and no doubt many of the members, having long anticipated a trip South, will now be delighted to feel that their desires are about to be gratified.

Indications point to a large attendance, and with this prospect in view, those in charge at the southern end of the line are putting forth every effort to add to the success of the meeting and make it an event that will be long and pleasurably remembered by all who are fortunate enough to attend. Some further useful and interesting information by Dr. E. I. Smith, chairman, Committee of Arrangements, may be found in this number of THE JOURNAL.

New Orleans has become a great convention city, where many of the largest organizations in the country meet; and

being one of the most unique in the United States, it offers to the visitor many interesting things that are not to be seen in any other part of the country. The date selected for the meeting is a very propitious one, so far as weather conditions are concerned, and should do away with the impression, which some may still entertain, that the weather is always hot in that section of the country.

The literary part of the program will, we are assured, be excellent in every feature; and added interest will be given to it by a strong contingent from the Army Veterinary Corps, with its recent and ripe experience gained in active service both at home and overseas.

The Association is so rapidly increasing in membership, and with increased problems to be solved for the good of the whole profession, that important topics for discussion will no doubt come up at the New Orleans meeting which should invite a numerous attendance. Besides, the South is now largely represented in the Association; and as it is not probable that another meeting will be held so far south for some time to come, it should behoove the members to try to make the coming convention one whose presence will not only be appreciated for the time-being, but whose effect will be lasting in adding and benefitting the profession in the South, where such is so much needed, and, incidentally, the stockowning public, whose interests are yearly growing in importance. We repeat, therefore, let us have a rousing Southern meeting, in November, in the Crescent City.

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### THE CARRIER PROBLEM IN COMMUNICABLE DISEASE.

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Shaw<sup>1</sup> made the statement, that, "with the advance of scientific research our old pet theories go on the scrap heap while new theories are evolved. Now that transmission of disease through the air and by fomites has been disproved, the present explanation is that communicable disease is transmitted only by means of infected persons, unrecognized cases and healthy carriers." This statement was made in connection with the subject of cerebro-spinal meningitis in human beings, and might apply to other infections in the human family. It has an application, however, to disease of a communicable nature in the subjects with which the veterinarian has to deal. Take the ques-

tion of anthrax, for example. Morris,<sup>2</sup> of the Louisiana Experiment Station, proved, by experiment, that numerous animals, of the flesh-eating variety, and also carrion-feeding birds, were capable of spreading the spores of this infection, after feeding upon anthrax-infected flesh, or artificially-prepared ingesta containing the organisms. These carriers included the hog, dog, cat, opossum, chicken and the buzzard, and with the exception of the buzzard, spores were found in the feces. In the case of the buzzard, however, while the excrement did not contain spores, infection was found on the beak and feet of these birds after they had fed upon anthrax material.

Later,<sup>3</sup> the same investigator found that blood-sucking flies, of the skin-piercing variety, as well as mosquitoes, after they had fed on the blood of anthrax-infected animals (guinea-pigs) were capable of transmitting infection to healthy ones.

And still later,<sup>4</sup> Morris found that non-biting, or surface sucking flies, such as the common house-fly, "blue-bottle" fly, etc., could carry infection from anthrax flesh to a healthy animal by simply walking over a fresh surface wound on the latter.

Instances and references might be multiplied in the case of this, as well as other infections, to show that the solution of the carrier problem in communicable disease is of the utmost importance in the control of this class of diseases; but of greater importance, to the veterinary sanitarian, especially, is the careful and sanitary treatment and disposal, or destruction, of the sources from which the numerous living carriers obtain their supply of infection. And in a great majority of cases, at least, this resolves itself down to the effective manner in which germ-laden carcasses are disposed of. So that we may have our live stock sanitary laws and our protective agents in the way of biologics, but until we can have those laws rigidly enforced, especially with regard to the thorough destruction of infected carcasses, and the sources of supply eliminated, the carrier problem is going to remain a very serious one in its relation to some of our most decimating animal infections.

1. Shaw, H. L. K.: The Cause of a "Sporadic" Case of Cerebro-spinal Meningitis, *Am. J. Dis. Child.* 18: 161 (Aug.) 1919.

2. Louisiana Bulletin No. 136, (Nov.) 1912.

3. Louisiana Bulletin No. 163, (March) 1918.

4. Louisiana Bulletin No. 168, (May) 1919.

Dr. Chas. H. Higgins (Montreal) will lecture this year at the New York State Veterinary College, New York University.

## THE TUBERCULIN TEST.

G. E. JORGENSEN, Clermont, Iowa.

In the July number of the JOURNAL there is a very interesting report on a test and retest of a herd of cattle by Dr. D. H. Jones, of the Ontario Agriculture College. This article brings us face to face with two very important points. They are, 1st, the reliability of the test based upon its proper application, and, 2nd, the time for the retest.

1st—The reliability of the test based upon its proper application. In my opinion the success or failure depends primarily upon the patient, careful and painstaking work of the practitioner. There is a great tendency on the part of many busy practitioners to do this work in between calls. This results in irregular, inaccurate and often prematurely concluded tests. This absolutely will not do. What is worth doing at all is worth doing well, and in this case it must be done well or it is worse than if not done at all. There is only one thing to do; and that is to demand enough for the work so that one can afford to devote one's entire time to that particular test or let someone else do it who has the time and patience. I want to cite a case which I disposed of for the State a month ago. This was a seven-year-old grade cow tested in the usual way with a number of others in a town where for the people's safety a test ordinance had been passed. The post tuberculin temperatures in this case had been concluded on the 16th hour. The next morning, 32 hours after the injection of tuberculin, she developed an ailment composed of a temp. of 106.5 and a slight induration of the left posterior mammary gland. It was both possible and probable that this was an extemporaneous and subsequent mammitis having no bearing on the test whatever; however, I absolutely could not place any reliance on the test as made, hence upon conferring with Dr. Wall, State Veterinarian of Iowa, I placed her in quarantine for a retest on suspicion, and made several smears and inoculations on proper media with the milk from the affected quarter after treating it with antiformin.

Out of twelve smears I demonstrated the characteristic acid-fast organism in 2 smears, but was not able to develop any growth upon the media.

On retest this cow reacted on the 16th hour, and upon slaughter showed lesions in the mesenteric glands. Smears from the milk now negative and the mammary gland normal, while a few organisms were found in the feces. I think that this case is a most convincing example upon which to base my above stated argument.

2nd—The time to retest: Up to the present I have not heard of any theory or explanation of the phenomenon of reaction outside of anaphylaxis. This consists of the presence in the body of protein splitting lysin specifically developed against the *Bac. tuberculosis* by the presence in the reactor of the toxins and organisms. When a dose of tuberculin is injected, this causes an anaphylactic reaction and the lysin stored up is used, hence it seems logical to believe that the proper time to make a retest is sometime hence when the production and accumulation of lysin has again occurred. The reaction following the retest by Dr. Jones may be due to only a partial use of the lysin in the first test; however that will not hold in every case, as another veterinarian and myself did some experimental work along this line several years ago which seems to prove this. We injected a large (double) dose of tuberculin into two reactors 5 and 15 days apart, respectively, with no reaction whatever. On postmortem the disease was demonstrated in both animals. On the other hand I have applied the retest to several, both reactors and non-reactors 60 days after the first test, and in the case of reactors have been able to prove up the reliability of this procedure.

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### TUBERCULIN TESTS.\*

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By DR. C. C. WALKER, Helena, Montana.

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It is indeed with some hesitation that one takes up the subject of "Tuberculin Tests," as many abler men have discussed the various phases of this question. However, a few facts and data obtained during the last two years in tuberculosis eradication work may be of interest to you. As most of you know, my whole time has been given to this work since I came to Montana.

It is unnecessary for me to discuss the technic of either the subcutaneous or the intradermal tests. It may be well to state, in a general way, the manner in which a combination of tests

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\*Paper read before Montana Veterinary Medical Association at Butte, Mont., June 26-27, 1919.

can be applied to a herd with some show of getting the most out of each. We may also include the ophthalmic test, which, I am convinced, can be used under certain circumstances with excellent results.

From all the data I have been able to obtain and from my own experience, I would say that the intradermal test should have a clear field for at least 48 hours before the subcutaneous is used, if it is intended to use both on the same herd for the purpose of obtaining comprehensive results or as a check test, and should be used in herds which have not been recently tested, say within 60 days, by any test. As a general rule, to which there may be exceptions, the subcutaneous test may follow the intradermal in 48 or 72 hours or any longer period with good results. What little data I have would tend to show that the ophthalmic has no blocking effect on either the subcutaneous or the intradermal tests. On the other hand the ophthalmic seems to give more definite reactions when given with or following any of the tests. The second ophthalmic, when given about 48 hours after the sensitizing dose, always shows a more marked reaction than the first test. For this reason it would seem that we had a good agent in this test to pick out plugged reactors or to help decide between suspicious and real reactions to the other two tests.

When we wish to find out the real condition as to tuberculosis in certain herds we can use all three tests to good advantage. In our field work where our time is valuable and we want to get as much work done as possible, we can give the intradermal injection and insert ophthalmic disc at the same time. An observation of results of first ophthalmic is not essential, or not absolutely necessary, as same animals will show a more marked reaction to the second ophthalmic, when careful observations should be made. This reaction may be seen as early as 6 hours and, in some cases, as late as 18 hours after insertion of discs. We can give the subcutaneous test 48 or 72 hours after making intradermal injection and the insertion of first disc, taking the temperatures in the regular manner. The second ophthalmic dose, double the first or two discs, may be inserted at the same time the subcutaneous injection is made and observations can commence at the same time the postinjection temperatures are taken. If this method of procedure is followed no time is lost in waiting around and I believe the results will be excellent. I have not tried this

method many times so I make the statement with reservation.

The combination of these three tests will assist us in cleaning up herds with a bad history as we may be thus enabled to eliminate all or a larger proportion of the tubercular animals at the outset instead of waiting six months for a retest to remove tubercular animals which may pass the first test. It is an undeniable fact that some animals will pass any one of these tests and very frequently—too frequently for our peace of mind—some of these are spreaders and new animals will be infected before it is time for a retest under our rules governing the time for retests. On the other hand it is also true that we get apparent reactors to any of these tests as shown by our postmortem reports. We have been taught that the test was correct in about 98 or 99 cases out of 100. Those of us who have posted a lot of reactors know that the efficiency of the test is much less than has been supposed. Even so there is no other method anywhere nearly as good for eliminating the tuberculous cow. Therefore, if we can get a combination of tests, or can alternate the tests, we may get better results than we have in the past.

Some of the advocates of the intradermal test claim that 100 per cent of the reactors will show lesions on postmortem if the test is given by a well-trained man, and also if one does not find lesions he does not know how to give the test. I believe that neither of these things are necessarily true; that there are apparent reactors in non-tubercular cattle, in a very few cases, as there are with the subcutaneous and eye tests, and a few are passed by it as with the other tests. I base my opinion on the results of my own work and of the other men associated with me in this work. All of us will admit that there is a great difference as far as accuracy is concerned if we consider the work of a man who has made a large number of tests and has followed up his reactors with postmortems, as compared with the work of a beginner. Nevertheless it occasionally happens that a good man will find a nice typical swelling and fails to find any lesions. This occurs so seldom that it militates very little against the test. It may be claimed that the fault is always due to lack of careful search for lesions when we get these intradermal reactors as is usually claimed in similar cases of subcutaneous reactors.

We commenced to test for the accredited herd in this State in August, 1917, using the subcutaneous test. In most cases the herds we tested had been tested more or less regularly over a

period of years. For the most part these had been tested by the intradermal method during the three or four years prior to the accredited herd work. As a general rule the results of our tests were in agreement with the previous intradermal tests as far as one would expect to find from the individual history of the various herds. I shall now refer to some of the differences we found and will cite herds tested with one, or two kinds of test, and with a combination of tests.

#### HERD No. 1 (133 head Purebred Holstein).

History: Had been tested at least once a year and no reactors found for over six years. Both the subcutaneous and intradermal tests had been employed, the last test being intradermal. No untested animals had been admitted to the herd for some years.

Results: There were 5 reactors to subcutaneous test, one being slaughtered and no lesions found; the others passed later tests. The following is a chart of reactors:

	2pm	5pm	9pm	6am	8am	10am	12m	2pm	4pm	5pm	6pm	
1	1.2	1.8	1.2	2.4	3.6	4.8	4.5	4.4	3.7	3.4	2.0	
2	1.4	1.6	1.6	2.2	4.0	3.5	4.2	4.2	4.1	3.8	2.9	1.8
3	2.2	2.6	3.0	3.2	3.2		2.4	3.2	4.0	3.8	Continued	
				8pm	10pm	12m	5am	7am	9am			
				5.8	5.8	5.0	4.1	3.9	2.2			
				6am	8am	10am	12m	2pm	4pm	5pm	6pm	
4	2.2	2.6	3.0	2.6	2.8	2.8	3.0	3.6		4.1	Continued	
				8pm	10pm	12m	5am	7am	9am			
				3.4	5.4	3.1	2.3	2.2	2.0			
5-7 day retest,				3am	5am	7am	9am	10am	11am	1pm	2pm	3pm
2.0	1.6	1.4		1.0	2.0	2.7	2.8	4.8	5.6	5.2	5.5	4.9
				5pm	7pm							
				2.5	2.4							

Cow No. 1 slaughtered, no lesions.

#### HERD No. 2 (150 head Purebred Holstein, State owned).

History: The last reactors were removed 8 years previously and herd had been regularly tested up to time of our test, 4 times subcutaneously and 3 times intradermally. No untested animals had been admitted to herd.

Results: 2 reactors and 2 suspects found. One reactor and, by error, one suspect killed, no lesions found. See chart.

	2pm	5pm	7pm	5am	8am	11am	2pm	4pm	5pm	
1	0.8	1.8	1.8	2.6	3.3	3.9	0.6	1.4	1.6	Not killed.
2	2.2	1.8	1.8	3.2	3.8	3.6	0.6	1.4	Susp. killed, no lesions.	
3	2.0	2.0	2.4	2.8	3.8	4.2	2.4	3.8		
4	0.8	1.7	1.4	2.0	2.0	3.7	99.8	1.0	1.0	Not killed.

#### HERD No. 3 (18 head Purebred Holstein, State owned).

History: Reactors removed two years prior to our test, but no reactors on test one year before.

Results: 2 reactors, no lesions on postmortem. See chart.

	4pm	6pm	8pm	5am	7am	9am	11am	1pm	4pm
1	2.0	2.0	3.0	4.4	4.6	3.6	2.6	2.4	2.4
2	1.0	1.8	1.6	4.0	5.6	3.4	2.0	1.6	1.6

HERD No. 4 (70 head Purebred Holstein, State owned).

History: Had been regularly tested for some years and no reactors found, last three tests by intradermal method.

Results: 2 reactors, one of which was killed but no lesions found, and the other one year later tested during the same period with the subcutaneous, intradermal and ophthalmic with no reaction to any of these tests.

	2pm	5pm	9pm	6am	8am	10am	12m	2pm	4pm	
1	1.7	2.4	2.3	4.0	4.6	4.8	5.1	4.0	3.8	
2	0.6	1.2	1.7	4.5	5.0	5.2	5.8	3.3	3.0	Killed, no lesions.

HERD No. 5 (about 85 head mostly Purebred Holstein, State owned).

History: Had been regularly tested and no reactors found for over ten years. Same herd passed first test for accredited herd but found one reactor on second test. See chart.

	2pm	5pm	9pm	6am	8am	10am	12m	2pm	4pm	5pm	
1	1.8	1.6	2.2	1.4	4.0	3.2	2.4	2.2	2.2	1.4	Killed, no les.

HERD No. 6 (140 head Purebred and grade Holstein).

History: Had been tested about 2 years previously with no reactions.

Results: 3 reactors found on first subcutaneous test. Lesions demonstrated in one but not in other two.

Six months later on intradermal test 2 reactors found and these two were given subcutaneous tests 72 hours after intradermal, large doses, 15 cc., and both passed last test. Both of these cows were killed, one showing positive lesion and the other nothing definite macroscopically or microscopically.

	3pm	5pm	8pm	5am	8am	11am	2pm	4pm	5pm	
1	2.2	2.0	2.8	4.2	3.4	1.6	2.0	2.0		No lesions.
2	1.9	2.6	2.7	2.2	2.8	4.8	4.5	5.6	5.4	No lesions.
3	2.0	1.2	1.9	0.8	1.2	2.8	4.0	4.2	2.0	Lesions.
2nd test intradermal reactors injected 72 hours previously:										
4	1.8	1.0	0.6	0.6	1.8	1.8	2.0	2.0	1.4	1.2
5	1.6	1.8	1.8	2.2	1.8	2.4	2.0	2.0	1.0	0.8 0.6

HERD No. 7 (about 50 head Purebred Holsteins).

History: Had never found reactors on the place and herd tested about once a year for five years.

Results: An intradermal test showed two reactors; these were given the subcutaneous test about 96 hours afterward and neither showed any reaction. They were left in herd as they had not signed up for accredited list.

HERD No. 8 (69 head, mostly grade Jerseys).

History: No definite history of tests but owner said herd had been tested but no reactors found.

Results: 2 reactors to intradermal test, neither of which showed definite lesions.

HERD No. 9 (35 head Purebred Polled Durham).

History: Nothing definite as to tests but presence of tuberculosis was suspected.

Results: One reactor to first subcutaneous test, lesions on postmortem.

About 4 months later same herd tested intradermally and 8 reactors found, all of which showed lesions, three being generalized cases.

One old cow passed the first subcutaneous test and two subsequent intradermal tests, but reacted to third intradermal, was the worst case of generalized tuberculosis I ever saw.

About 6 months later the same herd was tested by the intradermal method and 7 reactors found. All of these showed lesions with one exception, and this cow had nice typical swelling.

HERD No. 10 (40 head Purebred Holstein).

History: This herd had been tested more or less regularly for two or three years and a few reactors were taken out from time to time. From all the results we have had in this herd it would seem that all or nearly all of original herd were plugged reactors at time they were shipped to the state in 1914. At any rate there were tubercular animals in the herd before its purchase by present owner. This may account for the fact that several of these cows passed the tests and that they had at time of our first test eliminated the effects of tuberculin injections.

Results: 16 reactors and 6 suspects on first subcutaneous test. All of the 16 showed marked lesions, 8 of them being condemned as unfit for food. The advice was given to also dispose of 5 of the 6 suspects at same time, but this was not done.

In about 3 months the whole herd was given the subcutaneous test and all passed, including the suspects. (Two calves reacted.)

In about another 3 months a subcutaneous test was given and two of original suspects reacted, the rest passing. These two showed well-marked lesions.

About 6 months later all three tests, the subcutaneous, the intradermal and the ophthalmic were given.

The intradermal injection was made about 3 p. m. on May 7, 1919, and the first ophthalmic inserted the same evening at 8 p. m. Observations were made the next morning at 6 and 9. Three cows showed suspicious reaction to ophthalmic. On afternoon of May 9, preliminary temperatures were taken and at 8 p. m. the subcutaneous injection was made, about 8cc. being given each cow, 15 to bulls, and at the same time two discs of ophthalmic tuberculin were inserted. The subcutaneous was given to eight cows and two bulls and ophthalmic to ten cows and the two bulls, one cow very near parturition and one having a metritis. The younger animals were given the intradermal only.

Observations and first temperatures were taken at 4 a. m. on May 10. Two of the cows suspicious to first ophthalmic showed marked reaction and the other one still suspicious. Both cows showing ophthalmic reaction also reacted to intradermal test; one had a very typical swelling but other was not very typical. There was no rise in temperature in one cow and the other showed a rise from 2.2 before injection to 3.5 after injection, or may be regarded as a suspect to subcutaneous test. This cow was one of original suspects and showed marked lesions of bronchial and mediastinal glands. The other cow showed a tubercular arthritis in one hock and a tubercular lesion in lung as big as a pigeon egg.

The other cow suspicious to eye test passed the intradermal test and on June 5-6 another ophthalmic and the subcutaneous test was given with no reaction.

As this herd now stands all of the older cows have been killed with one exception and she is one of the original suspects; the other suspect is 4 years old and is the one last tested in June. The bull was a suspect but was very hard to handle on the first test. He has passed all other tests.

It is fair to presume that we have removed the spreaders, as none of the younger cattle react to the later tests. It is advised that the bull and these two cows be slaughtered in case more valuable animals are to be added to the herd.

HERD No. 11 (about 125 head Purebred Holstein).

History: This herd was imported into the state from three Eastern States and was tested before being shipped, some six or

seven years ago. Two or three years passed before they were tested in this State. The history goes back to November, 1916, when the first test was made.

Results: First test, intradermal, November, 1916: 74 tested (milk cows), 27 passed, 9 suspects, 38 reactors, 52 not tested.

Owner wanted subcutaneous test and the herd was given this test in January, 1917; 122 tested, 72 passed, 8 suspects, 41 reactors, 4 not tested.

Original intradermal reactors kept in quarantine but included in this test.

Forty of the 41 subcutaneous reactors were posted and lesions found in 39; the other, which was suspicious to the intradermal but reacting to the subcutaneous, showed no lesions.

A comparison will show that 20 intradermal reactors either passed or were only suspicious to the subcutaneous test. Out of the 27 passed by intradermal, 4 reacted and 1 was suspicious to subcutaneous test. Out of the 38 reacting to the intradermal test 13 passed the subcutaneous, 6 were suspicious, one not tested, and of those suspicious to the intradermal 2 were passed and one suspicious to both tests.

Third test: Subcutaneous May 1917; 93 tested, 64 passed, 7 suspects, and 22 reactors.

The former intradermal reactors (20) were in this test. Of these 20 intradermal reactors 14 passed this test.

The 22 reactors were posted and all showed lesions. Nine of the 14 former intradermal reactors passing this test were also posted, all showing lesions.

Fourth test: January, 1918, subcutaneous: 73 tested; 50 passed; 10 suspects; 13 reactors.

The 5 remaining intradermal reactors were in this test and a dose of 15 cc. was given to each cow. One reacted, two were suspicious and two passed the test.

The 13 reactors, one being former intradermal reactor and also reacting to this test, and the remaining 4 intradermal reactors, making 17 in all, were posted, all showing lesions.

Fifth test: Intradermal: April, 1918: 61 tested; 2 reactors, the same animals also reacting to the ophthalmic which was given at same time. These two reactors showed lesions.

Sixth test: Subcutaneous: 39 tested, 1 reactor. September, 1918. Reactor showed lesions. Some young animals not tested.

Seventh test: Subcutaneous: November, 1918, 58 tested, no reactors.

Eighth test: Intradermal: March, 1919, 81 (including calves) tested; no reactors; no suspects.

NOTE: There was one 11-year-old cow which had lost condition; this had been noticed for 4 or 5 weeks, and this led to the supposition that she was suffering from tuberculosis and for this reason she was given, besides the intradermal, the subcutaneous, the first and second ophthalmic and the intrapalpebral tests, but failed to react to any of them. As cow was about to die she was posted and it was found that she was suffering from acute nephritis, but a close examination of the glands revealed several tubercular nodules in one bronchial gland. These were apparently of the healed variety. This cow had passed all tests given the herd.

We have killed over 100 animals out of this herd and it is probable that we have it cleaned up as far as tuberculosis is concerned. A combination of tests will be of value in making the next test of this herd.

In order not to have all the data on one side I should like to refer to one herd of Purebred Polled Angus cattle of 82 head which were tested by the subcutaneous method, 40 reacting and lesions being found in 39 head of these. In this case all suspects were called reactors with owner's permission. One suspect did not show definite lesions.

Another herd of Shorthorn cattle, 170 head including calves, were tested by the intradermal method, 56 reacting; all of these, with one exception, showed lesions on post mortem. The last two herds were posted in Butte and Billings respectively under B. A. I. supervision.

In one of the largest herds tested, about 750 head, these were tested by the intradermal method; there were 170 reactions. All these animals were killed under B. A. I. supervision, part of them in Butte and part of them in Chicago. About 100 head were shipped to Chicago under the new quarantine law last fall, and all showed lesions except 4 or 5 head.

A careful consideration of the facts presented will convince one that we have something to learn about tuberculin tests. It is almost impossible to draw definite conclusions from these various and conflicting data. It would seem that in some herds the intradermal test was more efficient than the subcutaneous and in

others it was about the same with either test. In any herd with a large percentage of tuberculosis, no recent tests having been made, either test is very accurate when applied by trained men. In herds which have a fine history, and which would seem to be entitled to a place on the accredited herd list, we may get a very few supposed reactions to any of the tests.

It would seem that we have a valuable agent in the ophthalmic test to check up the findings of the other two tests. This can be used in herds having a large number of reactors and in herds which have been clean and in which we get reactors or doubtful reactors and want to find out the real facts.

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### **TUBERCULOSIS ERADICATION IN PENNSYLVANIA.\***

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T. E. MUNCE,  
Harrisburg, Pa.

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In Pennsylvania, herd owners have two methods to choose from in eradicating tuberculosis. In brief, they provide as follows:

1st. Officially Accredited Herd Plan. Coöperatively between Federal and State Bureaus to establish throughout the United States what is known as Officially Accredited Tuberculosis-Free Herds. To secure this coöperative assistance, the herd owner must comply with the requirements contained in the agreement between the United States Bureau of Animal Industry and Pennsylvania Bureau of Animal Industry. The examination and tests are conducted at stated intervals by Federal and State Bureau agents free of charge. The owner is partially indemnified for condemned cattle by payments from Federal and State Bureau funds as available by legislative appropriations. In some instances payments are deferred until moneys are available; but there has been no default of payment. Condemned cattle are appraised at market value as agreed between owner and agent. The law limits the payment of indemnity by the State to \$70.00 for a registered and \$40.00 for an unregistered animal. In addition to the amount paid by the State, the Federal Bureau may pay not more than \$50.00 for a registered and \$25.00 for an unregistered animal. The law limits the amount the owner may receive from all sources, *i. e.*, the State, the Federal Govern-

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\*Presented at Annual Meeting of the Pennsylvania State Veterinary Medical Association at Harrisburg, Penna., January 22, 1919.

ment and the butcher, to 90% of the market value as established by the owner and State agent.

2nd. Unofficial Plan. The owner may arrange for the testing of one or more animals, or the entire herd, but no indemnity will be paid and the owner is under no obligation to continue the testing. Examinations and tuberculin tests are conducted at owner's expense, by a veterinarian selected by the owner, provided such veterinarian has been approved by the State Bureau. All tests must be reported promptly and the condemned animals handled according to law. This plan is to take care of herd owners who are unable or unwilling to obligate themselves under any prescribed plan in the effort to rid their herds of tuberculosis.

The first formal application under the officially accredited plan was received April 1, 1918, four months after the plan was adopted at Chicago. We have not been pushing this proposition vigorously by urging our breeders to test their herds. Had we done so, we could have had many applications to report today. We do not deem it good policy to urge tuberculin testing upon our farmers, believing it far better to be content with the policy of calling their attention to the economic losses that result from neglecting to check the progress of tuberculosis in their herds and to acquaint them with the best known methods for detecting and eradicating the disease.

We have in Pennsylvania approximately 1,532,000 cattle with an estimated value of \$101,176,000 which, in the speaker's opinion, is low. Of that number, 914,000 are said to be milk cows, estimated to be worth \$75,000,000, which is certainly conservative.

In the herds tested under the officially accredited plan, 5% were condemned. Granting there are 1,000,000 milk cows in the State and 5% are tuberculous, we had last year in Pennsylvania 50,000 tuberculous cattle with an assessed value of \$72.90 each, or \$3,645,000.

A further insight as to the waste resulting from tuberculosis may be gleaned from the records of post mortem examinations made by Federal and State agents at establishments in Pennsylvania outside of Philadelphia and Chester. These records show that out of 100,000 cattle killed under inspection, 3,273 (3¼%) or 131 car loads were diseased; 1,076, or one long train of 44 cars, were so badly diseased that they had to be tanked, and tubercu-

losis is spoken of as a preventable disease. The records for Philadelphia, our largest slaughtering center, and Chester were not available, but had they been obtained they would have shown the losses even more appalling. Another thing to remember is that these figures represent only approximately one fourth of the cattle slaughtered in Pennsylvania. Furthermore, keep in mind that the worst cattle are, as a rule, killed at establishments at which no inspection is maintained and data, therefore, is not available.

The foregoing figures relate to cattle alone and do not include losses from tuberculosis in hogs.

If we accept the foregoing as true, then we are confronted by the question: Is it worth while, economically, to attempt to check this disease? I say economically because everything industrial, social, and even moral, it seems, is reckoned nowadays in dollars and cents. The public wants to know, and rightly too, what a thing will cost and what it will yield when produced. The question, then, is one of production and preservation. Does it pay to produce livestock? If your answer is affirmative, then it will pay to preserve it. If a thing is worth producing, it is equally worth preserving. If a product is not worth preserving, it is not worth producing. The two go hand in hand, we cannot get away from that. The laws of nature teach that and we see it on every hand.

Some oppose the tuberculin test as a practical proposition, on the ground that it is not accurate and suggest postponing the work until a perfect diagnostic agent is brought forth. Such a theory may be good, but do such advocates apply this principle to other things? We think not. They use, as a rule, the best agent available. I say as a rule because they do not always take advantage of the best, being willing at times to use a substitute for the best, the almost as good product. If our home caught fire we would not inform the fire department to keep hands off just because they failed to extinguish every fire in the community. If our wife or child contracted a dangerous, infectious disease, we would not refuse to call our physician on the ground that some of his patients had died from the same malady. We do not refuse to ride on trains because of accidents. We do not dispose of our automobile because of occasional carburetor or tire trouble. Those of us who have had anthrax or blackleg among our cattle do not refuse to vaccinate annually against these diseases because

the vaccine occasionally fails to produce the desired immunity. We do not refuse to have anti-hog cholera serum administered because, in a previous outbreak, some of the vaccinated hogs contracted the disease and died. Our grain binder occasionally misses tying a sheaf, yet we do not discard it and return to the reaper or cradle and tying by hand. These agencies, like hundreds of others, are not perfect by any means, yet we constantly employ them. Why? Because they are the best at hand. They are practical illustrations, matters of daily occurrence, yet we take little, if any, account of the failures, but continue to use such agencies as we have, imperfect as they are, almost in full confidence and as though they were exempt from liability to mistake.

For this there is a reason. Is it not because we see for ourselves the disaster that will follow and the losses which will be sustained if a remedy is not applied? Is it purely a matter of understanding application of the theory that seeing is believing? If our power of vision were increased to a degree that we could determine by the naked eye, see for ourselves whether our cattle are tuberculous or healthy and, if diseased, we could observe the progress of the malady from day to day, most herd owners would have a different vision of this important problem. As it is, the disease is hidden and we cannot observe its presence; moreover, its progress is usually slow, which further obscures its prevalence. If the breeders and feeders could be present at the slaughter of the cattle and hogs they raise and dispose of, they could then see for themselves the seriousness of the disease, get a better conception of the enormous losses and waste that take place yearly in our livestock industry.

It has been suggested that the time will come when the farmers who breed and raise the livestock will be called upon to bear the losses resulting from animals killed for food and condemned on account of disease instead of the butchers, as at present. As to whether this is the proper time to advocate such a policy, we are not prepared to say, but some day such rule or law will undoubtedly be adopted. When the time comes for the breeders and feeders to make good such losses, then, and not until then, will our people as a whole, appreciate the seriousness of the situation and realize that it is to their individual financial interest to give closer attention to the health of their stock. When the pocket book is touched, relief will be sought and a real and

united effort made to produce and maintain healthy herds. This, then, is no time to stop and loiter by the wayside. We must keep going at full speed. The ravages of disease and the waste which follows must be checked and such men as you must help to do it. If it was necessary, in the midst of the war, to stop waste and speed up production, it is, my friends, even more essential to do so now during the years of reconstruction. We have more people to help feed today than during the war or in the history of the world.

To those who advocate waiting until an absolutely accurate diagnostic agent is discovered before starting tuberculosis eradication, the answer is: No, the people are not willing to wait. Such a procedure is not in accord with the Yankee's way of doing things. We all know that when American citizens recognize the existence of a menace, they want to get rid of it as soon as possible and, to do so, they employ the best methods available. It is not the history of this country for its people to stand back and wait for the infallible—the dawn of a perfect day. They take the best at hand, use it and while using it, they perfect it.

We are not boosting this work. Tuberculosis eradication is forced upon no one. In Pennsylvania, tuberculin testing is now and always has been optional with the cattle owner and, furthermore, so long as we have anything to do with formulating the livestock sanitary policies, it will remain so.

The accuracy or inaccuracy of the tuberculin test is not, in our judgment, the basis upon which the question of bovine tuberculosis should be considered and discussed. The tuberculin test should be regarded incidental rather than paramount to the main issue. If we ever expect to successfully eradicate the disease in this country, it will not be sufficient to confine the work to removing diseased animals from the herds but the effort will have to be in the direction of building clean herds from healthy offspring. Remove the cause by breeding and raising healthy stock and not wait until the disease appears, then undertake to eradicate the trouble. In other words, build your herds from healthy foundation stock and surround the young with fitting environment as they grow into maturity and you will have done more toward solving the tuberculosis eradication problem than all the tuberculin testing that has been done on mature animals which have been kept under unsuitable and haphazard conditions. Go almost where you will and you will see the calves shifted

here or there to suit the convenience of the owner, unusually back in an out of the way corner where fresh air and sunlight seldom, if ever, reach.

Discontinue the practice of keeping the calves and other growing cattle in the same building with mature animals. Provide separate quarters including exercise yard or runway for the young cattle. These quarters should be situated, if possible, on ground with natural drainage. The side or end of the pen facing the south should not be enclosed. This will allow the cattle to go and come as they please and will permit the entrance of sunlight and fresh air, and last, but not least, they should have constant access to plenty of pure water, all of which are indispensable to good health. Cattle matured under such conditions will enter the milk line or feed lot in sound health and with a sturdy constitution sufficient to withstand the strain incident to the present forced method of milk and beef production and which will better enable them to ward off the common diseases cattle are heir to.

Tuberculin is an important factor in speeding up tuberculosis eradication work and in protecting our herds against outside infection, but most important of all, the essential thing is to breed and raise our herds under healthful environment. In districts of America where cattle are raised in the open, bovine tuberculosis is rare as compared to sections in which they are closely confined in poorly ventilated dark stables, as for example, most of our eastern bank barns. Do not understand me as condemning or even belittling the tuberculin test, because we have as much faith in the virtue of the test as ever. It is unquestionably the most accurate diagnostic agent available, but like all other human agencies, it is not infallible—it has its limitations. Unfortunately, most people, including many veterinarians, expect too much from tuberculin. They look upon and use it as sort of a cure all for tuberculosis. They apply a test, then go about their ordinary business affairs until it is time for another test. In short, they depend entirely upon tuberculin and ignore the truly essential things: breeding, feeding, sanitation, etc.

Tuberculosis eradication is a business proposition and any herd owner who is not prepared or is unwilling to carry on the work as such, and with a determination to succeed, had better leave it alone. To herd owners who have studied the proposition and see that it is to their interest to have healthy herds,

we are ready to cooperate with such owners to our fullest ability and with a resolution to win. To those who are interested but undecided and desire additional information, we will most gladly counsel with them at their convenience.

Permit me to say in closing that in tuberculosis eradication we may postpone the day of reckoning, but we cannot avert the imposition of the penalty. Bovine tuberculosis has got to go from our fair land. Your counsel and advice in perfecting plans for carrying on the work is most earnestly solicited.

### THE STATE LAW RELATIVE TO THE PHYSICAL EXAMINATION OF CATTLE.\*

VERANUS A. MOORE, Ithaca, N. Y.

Section 98, Chapter 311, of the Laws of New York, as amended and approved by the Governor May 3, 1919, contains the following provision for the physical examination of dairy cattle.

"The Commissioner shall cause a physical examination to be made by competent veterinarians of dairy cows whose milk is marketed in liquid form or manufactured into butter, cheese or other food for human consumption, where the conditions are such as to make it necessary, in order to prevent the products containing pathogenic bacteria, and he may cause a bacteriological test to be made of the excretions or secretions of any herd or herds of dairy cows or of any cow or cows within the state. Such physical examination may be made as frequently as available funds appropriated will permit and as the conditions may necessitate."

This law was enacted on the recommendation made by the New York State Commission for the Investigation of Bovine Tuberculosis appointed by Gov. Glynn and which made its report in March, 1915. This Commission was appointed for the purpose of ascertaining, if possible, what changes should be made in the law that would reduce, or tend to minimize, the amount of bovine tuberculosis in the state. The Commission consisted of 19 men†, deeply interested in the control of this disease. Their

\*Read at the meeting of the New York State Veterinary Medical Society, July 24, 1919, Brooklyn, N. Y.

†Theobald Smith, chairman, Henry L. Best, Herman M. Biggs, Albert L. Brockway, Herbert E. Cook, Parker Corning, James A. D. S. Findlay, Calvin J. Huson, O. U. Kellogg, Henry H. Law, V. Everett Macy, Albert Manning, Veranus A. Moore, Henry L. K. Shaw, Edward Van Alstyne, Phillip VanIngen, H. J. Wright, Linsley R. Williams, Secretary.

recommendation on physical examination took the form given in the statute referred to in 1917. The economic conditions occasioned by the war prevented the Commissioner of Agriculture from enforcing this statute until after the armistice was signed and then his appropriation was insufficient to carry it out in full.

This subject received very careful consideration by the Commission and the recommendation was voted unanimously. It was agreed by all that this measure would be beneficial in combating bovine tuberculosis. It was not intended as a substitute for any specific test nor does it change in any way the law relative to the use of tuberculin. When it came to the enforcement of this statute, the question arose as to whether or not such a procedure would be of sufficient value to justify it. The objectors based their argument on the fact that it was impossible to detect a very large percentage of tuberculous animals by a physical examination, and that after all the suspicious cases were removed, that could be detected by it, there would still remain many infected individuals. Some of those, who oppose the measure, feel it is unwise to employ a method of this kind when, as they say, there is a more efficient means of detecting infected animals, namely, the use of tuberculin. As those who have questioned its efficiency are, so far as I know, veterinarians, it seemed desirable to point out some of the benefits it was believed would accrue from its enforcement and, further, to emphasize the importance of physical examination and the part it can play in control.

From statements that have been made, it appears that some veterinarians are experiencing difficulty in understanding the value and limitations of the various methods for the detection and control of bovine tuberculosis. With the development of newer methods for diagnosis, there is a tendency to put aside procedures heretofore employed. Many members of the medical professions seem to have forgotten that the physical examination formed the basis of all diagnosis in the earlier years and, more than any other method, continues to bring into operation the power of observation and the skill of the practitioner as distinguished from those of the herdsman. If one turns to the early history of veterinary medicine, he will find that by this method quite remarkable achievements have been accomplished. In the Fourth Century, for example, Apsyrthus, the official

veterinarian of the Roman Army, diagnosed glanders by the physical examination alone; and by isolation and quarantine brought it under complete control. In the latter part of the last century, Dr. James Law diagnosed tuberculosis in one of the large state herds and by repeated and thorough physical examination and the removal of suspicious animals, eliminated it. For a number of years after tuberculin came into use, not a reactor was found in the herd. It is to be regretted that this foundation to the art of medicine should be surrounded by so many doubts and misgivings because, with greater knowledge of infections, we recognize that at any one time, all of the infected individuals cannot be detected by it. This condition has always existed. It is in America alone that veterinarians have tended to abandon this fundamental method for detecting disease and apparently for the astonishing reason that it is not one hundred per cent efficient.

In the rapid succession of new knowledge of infections, and special methods for their identification, there is a tendency to accept the last discovered test as the most reliable means of diagnosis. Already there are filed on our shelves the descriptions of many such tests that have been excluded from regular routine because of their limitations. Again, one cannot follow the evolution in diagnosis without recognizing how quickly an apparently satisfactory procedure becomes, for the best results, dependent upon some subsequently discovered or devised method of precision. Accurate diagnosis has become more and more difficult. In this country, there has come to be more or less confusion in the profession as to what is meant by physical examination and clinical diagnosis. It has become a habit of certain veterinarians not to differentiate between these two, and, what is more appalling, to look upon certain specific "tests" as being separate and distinct from either of them. As did the artists of old, so let us return to the teachings of the masters and see what is meant by each of these methods for detecting and identifying morbid conditions and infections.

The term physical examination means the systematic study of the various parts of the animal body by means of the ordinary senses. This was the only method known to the ancient veterinarians and to the veterinary profession as such from the time of Claude Bourgelat to the dawn of the newer pathological procedures more than a hundred years later. During this time, all

knowledge of specific diseases and their differentiation, one from another, was based on the findings of a careful examination of the body. There developed methods or systems of physical examination consisting of the orderly arrangement of the knowledge of the normal organs. No one, who has carefully analyzed the "Outlines of Clinical Diagnostics" by Malkmus, will fail to understand or appreciate the significance and comprehensiveness of this examination. In applying it, one examines each system of organs in the body, such as the respiratory, circulatory, digestive, nervous, etc., so that when he has finished, he knows whether or not there is any deviation from the normal in any part of the body that can be detected by the human eye, hand, or ear. It is self-evident that to be able to make these examinations, the examiner must be thoroughly familiar with anatomy and the functions of each of the organs.

As disease is a variation from the normal, it is evident that before one attempts to determine a morbid condition, he must know what the healthy organ is like. The physical examination enables one to ascertain by means of inspection, palpation, percussion and auscultation whether or not the normal condition exists. If it does not, there must be abnormal changes. It is possible, therefore, if there are deviations, to ascertain in what system and in what part they are located. The ability to make an efficient physical examination is one of the most difficult, and at the same time, most important acquisitions for the practitioner of either human or veterinary medicine. In the great schools of Europe, the teaching of this subject occupies a prominent place in the curriculum. In this country, on the contrary, we sometimes hear both practitioners and teachers of veterinary medicine refer to it with an air of contempt. The essential difference between the great clinicians and the average practitioner is the superior ability of the first to make a physical examination.

With the development of definite knowledge of the etiology and tissue reactions to invading organisms, methods have been devised for making positive identifications. These supplement the findings on physical examination and constitute clinical diagnosis. Clinical diagnosis, therefore, means the finding of morbid conditions on physical examination and identifying their nature by any means or tests that science has brought forth that may be applied to the living animal. Among these may be

mentioned the microscopic examinations, chemical analyses and specific reactions. The terms physical examination and clinical diagnosis are used often erroneously as synonyms. It is well to recognize that they may be likened to two variables, gradually approaching the same limit.

The purpose of the physical examination is now, as it always has been, to find any abnormal condition that can be ascertained by means of the trained senses. This naturally brings up the question as to the degree of accuracy of such examinations in (1) finding morbid conditions and (2) identifying any particular disease. In acute troubles, there are symptoms accompanying the lesions that aid materially in the identification of the trouble. In chronic maladies, however, they are more often absent. It is clear that a careful examination of the lymphatic system would indicate whether or not one or more of the glands, located beneath the skin or in reach by a rectal examination, are enlarged. It is impossible, from this fact alone, to state the specific cause for the enlargement. The same would hold with abnormal findings in other systems such as dullness on percussion or rales on auscultation. If, however, the morbid changes are well defined, they usually take on a form that is more or less characteristic of the disease with which they are associated. This, however, is not always true for frequently diagnoses based on such an assumption, prove to be erroneous. There are certain specific diseases such as tuberculosis, actinomycosis, glanders and some others that can be determined in a very large percentage of cases by the physical examination when the tissue changes have advanced to a certain stage. If the nature and general course of each of these diseases is understood, it is possible from the location and general character of the lesions, to be reasonably sure of the particular disease present. The degree of accuracy of such a diagnosis is determined necessarily by the knowledge of the disease possessed by the examiner and the relative frequency of other causes giving rise to apparently like manifestations.

In most cases where the physical examination indicates an abnormal condition, positive diagnosis depends on evidence obtained by certain supplemental methods, such as the tissue changes, the detection of the etiological factor or the presence of some specific reaction. The diagnosis, therefore, by physical examination, at least in cases of specific diseases, is presumptive.

This presumptive diagnosis stands in exactly the same position as many laboratory presumptive tests. For example, in the bacteriological analysis of water, the fermentation of certain carbohydrates with the production of a definite quantity of gas and acidity are presumptive evidence that the colon bacillus is present. The finding of acid fast bacteria in the microscopic examination of milk or excreta would be presumptive evidence of tuberculosis; a normal temperature in a certain percentage of cattle following the use of tuberculin is presumptive evidence that such individuals are free from tuberculous infection. Yet, no one familiar with these subjects would be willing to accept as positive the accuracy of the presumptive tests without more definite determinations. In like manner, the presence of obvious tissue changes, suggestive of tuberculosis, such as enlarged subcutaneous lymphatic glands, a hard and indurated udder or pronounced pulmonary disturbances, warrant the same degree of consideration as other presumptive tests which are accepted as sufficient evidence for action in every health department in the country.

However, the question at issue is to what extent can bovine tuberculosis be detected and controlled by a physical examination. As the first element in control is diagnosis, the question resolves itself into the accuracy of the physical examination in detecting disease. As the lesions are usually local and spread with varying degrees of rapidity, it is obvious that their presence cannot be detected in more than a small percentage of infected animals at any one time. In certain tuberculous herds, it may be impossible to find any of the infected individuals, especially if the tubercles are in the mesenteric glands, spleen or other deep seated organs. In most cases where lesions can be detected a positive identification is impossible without confirmation by some of the agents included in clinical diagnosis such as a bacteriological examination or the application of tuberculin. In other words, the physical examination makes possible a presumptive diagnosis in all cases where lesions can be located.

The significance of the physical examination is not measured entirely by the percentage of infected individuals it will detect but rather that the cases which can be found by it represent the more dangerous animals, that is, those that are more likely to be eliminating tubercle bacteria or are liable, in the near future, to do so. It is not presumed that it will detect all cases

that are spreading infection but it is known that it will find many of them and, if properly made and repeated at short intervals, it will single out in a reasonable time many of the infected animals before the lesions approach the stage where they can spread the specific organisms. If all such animals are removed, the chances for the sound cattle in the herd to escape infection are increased. Both Ostertag and Poels have assured me that, if carefully applied, a system of physical examinations with the removal of the suspicious cases, will check the spread of the disease and allow healthy calves to be grown up to take the place of the diseased adults. The physical examination cannot detect the occult cases and undoubtedly many of them, in which pulmonary lesions are discharging tubercle bacteria, cannot be found. If, however, it is supplemented, in herds where there is evidence that there are spreaders, by one or more of the clinical methods such as sputum cup or tuberculin, the dangerous individuals most likely will be detected. It was the intent of those who recommended the physical examination that in practice it should include all that could be hoped for in the clinical diagnosis. It was well understood by the Commission that this method would find, on any single examination, but a small fraction of the animals that were actually infected but that repeated examinations would detect them as they developed and, it was hoped, before they became spreaders.

It is clear to all who have studied or worked with tuberculosis that the use of tuberculin has been somewhat of a disappointment as the sole diagnostic agent in official methods of control. Again, the numerous theories and opinions regarding the nature of tuberculosis, that have found their way into popular bulletins, have prejudiced many people against using it. For these and perhaps other reasons, certain cattle owners have become indifferent to any and all efforts to detect and eliminate tuberculosis.

The great advantage of the physical examination is its educational value. If the statute is enforced, it will bring all owners of tuberculous herds in the state in contact with their veterinary advisers. If the latter are men possessed of a true professional spirit, they will utilize this opportunity to instruct their clients regarding the nature of the disease and the procedure that should be followed to purify their herds. They can explain the things that are essential and necessary in maintain-

ing tuberculous free herds and they can guide their clients in the disposal of diseased animals in such a way that they will cause the least loss and also do no further damage. The authority of the law creates a channel of friendly approach, a means of cooperation and an opportunity for veterinarians to gain the confidence of the farmers. The eradication of tuberculosis can never be accomplished without the desire of the owners themselves to have sound herds and their active cooperation in the work. By establishing this point of contact, the law has given the practitioners an opportunity to be the educators and advisers of cattle owners in all matters pertaining to the control of this disease. The prevention and eradication of disease is the principal reason for which the veterinary profession exists. The prevention and eradication of tuberculosis will be accomplished through the agencies of technical knowledge applied through professional service rather than by legislation. The introduction of the accredited herd plan and the value commercially of the sound herd, are helpful agencies to assist the veterinarian in accomplishing this purpose.

It should be clearly understood that the law calling for a physical examination of the dairy cattle of the state is to supplement the tuberculin and other specific means officially recognized for the detection of diseased animals and not to replace them. Experience has taught that there are many and serious limitations in the value of tuberculin. But recently, I knew of the testing of seven animals with it. Two reacted and five did not. Of these, three were condemned on physical examination and all five were tuberculous as shown by the post mortems. Not long since, a dairy that was being tested annually, yielded a large number of reactors each year. When physical and clinical examinations were made, a cow that had repeatedly failed to react to tuberculin was found to be eliminating tubercle bacteria in her sputum. After her removal, no further cases developed. These may be exceptions but they emphasize the fact that in the detection of infected and diseased animals, it is not safe to depend entirely upon any one method.

In the control of tuberculosis, we have to deal both with the infected and the diseased animals. There are at least three well defined procedures for detecting tuberculous individuals, namely: (1) the physical examination; (2) the use of tuberculin; and (3) the bacteriological examination of excreta, the sputum

cup method being the most valuable for pulmonary cases. There is no way of detecting the recently infected animals, that is, before the tubercles begin to develop. To eliminate the disease quickly, all of the known methods are required. Each procedure has its special significance and should be accepted for what it is worth and no more. The physical examination enables the examiner to ascertain:

1. The advanced cases of tuberculosis.
2. Supplemented by the bacteriological examination, it enables him to detect practically all animals that at the time are eliminating tubercle bacteria.\*
3. The skilled examiner can detect the location of lesions in a large percentage of less advanced cases so that the suspicious animals may be removed and the disease positively diagnosed by clinical agencies.
4. It will teach the cattle owner that there may be, and often there is, a direct relationship between tuberculosis and unthriftiness, chronic bloating, low production, "bad quarters," chronic cough, sterility and other miscellaneous ailments to which other causes are usually assigned.
5. It fixes the minimum requirement that Public Health interests should place on all cattle that produce market milk. The health authorities of every community should insist upon this examination being made in as thorough a manner as possible.

The physical examination has certain marked limitations, namely:

1. By it, the examiner cannot detect more than a small percentage (1 to 5) of the infected animals at any one time. For this reason, its value is restricted to the control of the disease within the herd.
2. As the occult cases cannot be detected by it, it is of little value in interherd control.

Tuberculin is undoubtedly the most efficient agent known to medical science for detecting tuberculosis. Its value is epitomized in the following statements:

1. When tuberculin is properly made and applied and a reaction to it follows, the individual can be considered tuber-

\* Tuberculosis resembles weeds in a garden. If one pulls up every weed as soon as it comes in evidence and before it goes to seed, the garden will become clean eventually. Likewise, if every animal in a herd infected with tubercle bacteria is detected and removed before it becomes a spreader or "goes to seed", the disease will, in a few years, be eliminated. It is in allowing infected animals to "go to seed" that keeps tuberculosis flourishing.

culous. The reaction is, so far as known, positive evidence of the existence of tuberculosis.

2. It will produce a reaction when the tissue changes are slight and consequently it is of inestimable value in detecting early cases.

The failure on the part of the animal to react to tuberculin, however, is not positive evidence that the disease is absent. A long experience in its study and use has shown that it has certain limitations which are referable to (1) the preparation of the tuberculin itself; (2) its improper use and the failure to interpret the reaction it produces and (3) the failure of the tissues in certain cases to respond to it. The limitations may be stated categorically as follows:

1. All strains or cultures of tubercle bacteria apparently do not make an efficient tuberculin.

2. When the cultures of tubercle bacteria, to be used in making tuberculin, are not properly grown, that is, when there is too much liquid in proportion to the surface area, the liquid does not contain an adequate quantity of the specific products of the organism to enable it to produce a reaction.

3. When, in the application of tuberculin, the observations of the person making the test are insufficient to detect the response to it, the reaction is missed.\*

4. When the interpretation of the manifestations following the use of tuberculin is not made in accordance with (1) normal physiological variations and (2) the laws governing the reaction, it may be misleading.

5. When tuberculin is applied in the period of incubation, a reaction cannot take place. Later when the tubercles begin to develop, the animal will react.

6. When the tuberculous lesions are arrested, healed, encapsulated or when they are very extensive, tuberculin sometimes fails to produce a reaction.

7. After tuberculin has been administered repeatedly, a reaction is liable not to follow a further administration of it.

The bacteriological examination for the specific organism, while forming the basis of the so-called Manchester method of

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\*The usual time for the temperature reaction to occur, after the injection of tuberculin, is between the sixth and tenth hour. The elevation continues for from six to twelve hours thereafter. Occasionally, however, reactions take place very early and sometimes they do not begin until from eighteen to thirty-six hours after the injection. See article by J. G. Wills and Chas. Lynch on "Delayed Reactions following Injection of Tuberculin." Report U. S. Live Stock Sanitary Association, 1913, p. 78.

combating the disease, should be utilized not as an independent method but in conjunction with the other procedures. It involves too much labor and expense to be applied generally and, like the physical examination, it would not detect animals with lesions in deep seated organs and, like tuberculin, it would very likely allow the arrested cases to escape.

When all the facts and principles involved in the complex question of the detection, prevention and eradication of tuberculosis are considered; and the auxiliary factors connected with it are taken into account, I am of the opinion that Section 98 of our Agricultural Law was not only justified but also that it offers the greatest possible opportunity for accomplishing results that can come with a single procedure. For this reason, the veterinary profession should do all it can to assist in the enforcement of this law. No one claims that it is anything more than a distinct part of the great composite of physical and clinical methods required to detect infected and diseased animals. The problem before us is to eradicate tuberculosis. Theoretically, the law requiring physical examination is well founded but if it has weak places, they will not be found until it has been put to a fair and just trial.

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### THE FUTURE VETERINARY CORPS OF THE ARMY.

By MAJOR C. D. MCMURDO,  
Veterinary Corps.

With the prospect of the adoption during the fall months of legislation for the reorganization of the Army, it would seem wise for the veterinary profession to consider carefully some of the possibilities which this legislation may hold for veterinarians in the military establishment.

Under the provisions of the National Defense Act of June 3, 1916, the army veterinarians were given for the first time the rank of commissioned officers and the Veterinary Corps made a part of the Medical Department. It is understood that this move was with the tacit consent of the Quartermaster General. The work of transferring the officers in their new affiliation was barely completed when the United States entered the war and no organization had been completed. Consequently the Veterinary Corps under the Medical Department is only about two years old. With all the stress of actual warfare during

this period it has of course been practically impossible to organize and develop the Veterinary Corps along the broad lines which could be followed in quieter days of peace. Emergencies had to be met as they arrived, leaving many questions of policy and procedure to be worked out when time should permit.

Notwithstanding these facts there has been apparent in certain quarters considerable agitation as to whether change in the affiliations of the Veterinary Corps is not advisable when Congress legislates for the new army. Several moderately well defined plans appear to have been suggested.

*First.* That the veterinary service be organized and kept a separate Corps.

*Second.* That it be united with the remount organization under a common head into a new Corps.

*Third.* That it become a part of the Quartermaster Corps.

*Fourth.* That it remain a part of the Medical Department as at present.

In the nearly thirty years that I have been connected with the army as a veterinarian, and more particularly during the past eighteen months in which I have served in the capacity of a general veterinary inspector, I have had an opportunity to study the work of the Corps, and perhaps understand its possibilities as well, or better, than any one who remained on this side of the Atlantic, and the arguments for and against these plans present themselves to me in the following order:

There is perhaps no more pleasant vision than that of the Veterinary Corps as an independent organization, with its own brigadier general and staff, its own training camp and school, its enlisted personnel, and its duties clearly defined, with every member of the Corps working for the common good. However, no one who has had any experience with the military establishment, believes this vision can become a reality.

Military history shows a constant repetition of the struggle for existence by the small organization and for supremacy by the larger one. "The survival of the fittest" has been written many times over in the Army. It is doubtful whether as a separate Corps the veterinary organization would last a fortnight. Perhaps a typical illustration of what is meant may be found in the history of the old Commissary Department. This Department had its birth during the Civil War, when, because of the need for greater efficiency, the Commissary was separated from the

Quartermaster Department. It had its own Commissary General and as an individual organization it rendered excellent service. It gave its officers and men training in its particular line of work and developed a high degree of proficiency. In 1912 it was absorbed by the Quartermaster Corps (together with other staff departments), the principal argument for such absorption being that the Quartermaster Corps could by adding one column to its books, carry on the work of the Commissary Department along with its own. No sooner was the absorption of this Department completed than its dissolution was begun. Its educational work has been discontinued, its *esprit de corps* has disappeared. Practically all that remains today of the Commissary Department, is the crescent in red which appears upon cases containing subsistence supplies.

The possibility of the union with the remount organization into a new Corps seems to have been the subject of discussion in the A. E. F. It is understood this plan contemplates the withdrawal of the remount branch from the Quartermaster Corps, and by union with the Veterinary Corps under a brigadier general, form a new organization or Corps. It has been claimed that the work of the remount service and the work of the Veterinary Corps are so closely associated that they might well be united under a common head. Except for this union at the head, it is contemplated that each organization would function along its own particular lines.

Two points of objection to this plan present themselves.

It cannot be conceived that the Quartermaster Corps would allow the withdrawal of the remount division, and the removal of its work from the Quartermaster Corps as it exists at the present time. Quartermasters and public animals have been associated since the beginning of military history, and the present policy of the Quartermaster Corps is to extend its field of operation rather than to contract it, and it is not believed that it would look with favor upon the withdrawal of the remount service.

Although the remount service and a certain branch of the work of the Veterinary Corps are closely associated, the same is not true of all of the veterinary service as regards the animals of the army nor of that other and important branch of the veterinary service, the meat and dairy inspection. Just how this branch of the veterinary service is to be coordinated with the remount work is not clear.

The veterinary service is quite essential to the successful functioning of the remount service but the reverse is not true and a veterinary service is maintained at many points quite independently of the remount service. One unacquainted with military methods might, with excellent logic on his side, argue that rather than allow the Veterinary Corps to be made a means of enlarging the powers of the remount service, the Veterinary Corps might well be extended by assigning to it and to its officers the purchasing powers at present reposed in the Remount Service. It is, of course, unnecessary to point out that the Veterinary Corps must from the nature of things function as a professional staff corps and not as a purchasing or procurement branch.

It might appear to the causal observer that the Veterinary Corps would render the best service to the Government by being affiliated with the Quartermaster Corps, for the reason that its work lies along the same general lines. All animals purchased for the military forces are purchased by the Quartermaster Corps, but pass the joint inspection of quartermaster and veterinary officers. Public animals, while in charge of quartermaster officers, are supervised and treated by veterinary officers with a view to preventing inefficiency and relieving disability. All purchases of meat for food products for the military forces are made by quartermaster officers, but their inspection is placed under the control and supervision of the veterinary officers. Forage and grain for the public animals, purchased by the Quartermaster Corps is, or should be, inspected by veterinary officers. This similarity of duties, has warranted the conclusion that these two Corps might well be amalgamated.

There are, however, these general reasons why such a procedure would not work to the best advantage, either of the Veterinary Corps or the military service. The inspection of animals and of meat and dairy products and of forage, should be conducted as separate and distinct from the purchase of these articles. In other words, the purchasing office should not be concerned in the determination of the quality of the supplies or animals offered. The inspecting officers should not be interested in the price paid. The accepted and published specifications are to be the sole guide in the determination of acceptable supplies or animals.

Because of the absence of professional literature, laboratory equipment and educational institutions in the Quartermaster Corps, and the well known tendency of the layman to belittle professional training, the tendency of the Corps under such an affiliation would, it is thought, tend toward a lowering of standards, rather than a raising of them. If affiliated with the Quartermaster Corps, quartermaster officers would determine the qualifications of the veterinarians eligible for commissions. One needs but to glance over the history of the veterinary organization at the time of the Spanish-American War, to find examples of the haphazard method by which the veterinarians were chosen for military service: at that time a number of veterinarians employed by the Quartermaster Corps were unskilled, uneducated non-graduates.

If the reader has any doubts as to the correctness of this statement, let him consult with some of the older veterinary officers in the present Corps.

As viewed by the onlooker the Quartermaster Corps is a tremendously large and constantly changing organization. Beginning with the absorption of certain staff departments in 1912, it has during the past emergency undergone a series of transformations. Within itself there are smaller departments and branches. The Director of Finance and the Director of Traffic have been separated to a degree. The Motor Transport Corps has been an offshoot, in fact, the entire Corps may be compared to a huge maelstrom, in a continual ferment, and where the Veterinary Corps would end once it became a part of this mass, is difficult to conceive.

The principal objection to the present plan of having the Veterinary Corps under the Medical Department, may be found in the fact that the Veterinary Corps functions under the control of medical officers.

The answer to this objection is that at the present time we have not a sufficiently experienced personnel from which to draw our administrative officers and so long as the Veterinary Corps is a part of the Medical Department it must be administered by representatives of the Surgeon General. It is confidently believed however that as the veterinary officers become better qualified in administrative duties, they will be allowed a higher degree of authority and experience less and less official interference from medical officers.

Under either of the two plans outlined, however, the Veterinary Corps would operate under outside officers.

It seems then for us to choose in our own minds at least whether we will remain under the medical officers, or be placed under non-professionals.

In consideration of these two controls, it is suggested that you ask the men who had experience under both departments, whether they would prefer to work under the Quartermaster Corps, or under the Medical Department.

Remember that for more than twenty years, a large number of veterinarians in the army had been a part of the Quartermaster Corps. In that twenty years they have been granted the magnificent salary of \$100.00 per month and denied the privilege of wearing the army uniform, and the veterinarians in other branches of the military establishment have attained the lofty height of donning the army uniform, drawing the pay and allowances of second lieutenants, mounted, but denied the rank.

Preventive veterinary medicine is closely allied to preventive human medicine. The two sciences proceed along parallel lines and the results of the investigations of one are frequently of valuable assistance to the other.

The work of the veterinary officers in connection with meat and dairy inspection, is essentially sanitary. The sanitation of the army is a part of the work of the Medical Corps, and by extending the training of its members, they could take over the work at present as done by the Veterinary Corps. With the Veterinary Corps a part of the Medical Department, there will be no occasion for such an extension, but with the Veterinary Corps as a separate organization, it is not difficult to imagine conditions under which such an extension might be given serious consideration. The Veterinary Corps has had limited experience in organization and administrative work. This is through no fault of its members, but due to the lack of opportunity. To endeavor to administer its affairs with inexperienced men surely would result in disaster. Some experiences to illustrate this point might be cited from the history of the Corps during the past few years.

It was only through the untiring efforts of the Surgeon General that the rank of major was restored in the Veterinary Corps. That the leading and patriotic members of our profession, who gave up lucrative practices and comfortable homes,

some even their lives, to serve their country in her hour of need, were not compelled to serve as second lieutenants, was due to the vigorous insistence of the Surgeon General, who appreciated their need of greater rank.

In my work as general veterinary inspector during the war, I have been frequently in conference with officers of the Medical Corps regarding sanitary conditions in the camps. I have invariably received the heartiest cooperation from them as well as many valuable suggestions. In several instances I have had to solicit their aid in convincing the commanding officers that suggestions made by the veterinarians were practical and necessary to the health of the command and should be carried out. Without their assistance it would have been a very much harder, if not impossible task to have established and put in force regulations governing the thorough inspection of all meat, meat products and dairy products consumed in the various cantonments and army camps.

The Medical Corps has always stood for higher education and a strict adherence to professional ethics. Associated with them we have the benefit of their extensive libraries and laboratories, as well as their instructors. As a strong argument in favor of the Veterinary Corps remaining a part of the Medical Department, it is only necessary for the reader to compare the results accomplished by the Corps in the United States with what was accomplished across the water, where it seemed that chaos reigned, not through any fault of members of the Veterinary Corps, as they knew what should be done and tried to accomplish results, but were hampered in their efforts through being placed under the Quartermaster Corps and having a layman at their head, while in the United States, under the interested and scientific direction of the Surgeon General, they not only worked in perfect harmony but developed an organization which secured results.

An efficient corps has been built up in the past two years. The material to work with was excellent, but it was entirely unorganized and woefully ignorant regarding military system and discipline.

In presenting these views to the veterinary profession, I have only one thought in mind, namely: that in considering this very important matter, important not only to the Veterinary Corps but to the profession as a whole, we may decide upon a

plan which will meet with the approval of the majority of the members of the profession. No plan is acceptable which has not for its basic aim, the building up of a Veterinary Corps composed of scientific veterinarians of the highest professional and personal qualifications—a corps second to no other and in every way a credit to its members, to the army and to the profession. We shall never be unanimous in details, but we should be united upon a general plan for the future. It is hoped that present grievances or prejudices will not be allowed to influence our decisions. Apparently the future of the Veterinary Corps promises much if we remain with the Medical Department. We shall share in the fruition of its plans. The Army Medical School will be open to veterinary officers. Its laboratories contain the veterinary section. Its training camps make provisions for its officers and enlisted men.

With the officers and men of its three Corps mingling thus intimately, in class rooms, laboratories, libraries, and camps, much will be done for the veterinary profession, in a professional, educational and social way. I believe in this direction our hope for the future lies.

Much has been accomplished under the Medical Department in the last two years. Shall we reject all that we have accomplished, and start out on a new and untried venture? I sincerely hope not. I feel sure that any member of the profession giving this matter mature consideration will concur in my opinion that the Veterinary Corps will attain the best results, both for the Government and for themselves, to continue as at present in close affiliation with the Medical Corps. I will venture to predict that after the continuation of the present affiliation for a few years, the results will be so excellent and so acceptable to the veterinary profession as to have completely and for all time obliterated future attempts to bring about a change.

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### CONTAGIOUS ABORTION DISEASE.\*

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By G. A. DICK, Philadelphia, Pa.

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Since January, 1916, the Pennsylvania State Livestock Sanitary Board has been conducting experiments in the manipulation of the ovaries in cattle to correct disorders of those organs and

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\*Report presented January 23, 1919, before the Pennsylvania State Veterinary Medical Association.

to determine the value of Abrechtsen's method of douching the uterus for the control of contagious abortion disease, and correction of abnormal conditions of the reproductive organs of the cow causing sterility. Inasmuch as the value of said treatment in aberration of reproductive function has been reported, it is the purpose of this paper to bring to your attention the results obtained in the control of this disease. This report is on three herds, A, B and C.

#### HERD A.

New animals were added to this herd at various times during the past three years because a sufficient number of calves were not raised to keep the herd up to the required number; by this practice new centers of infection may repeatedly have been introduced.

The aborters, also those showing a discharge, and a few that calved normally were treated by administering the uterine douche containing Lugol's solution. Shortly after birth all calves were removed to an adjacent farm where they were kept away from infected cows, and fed raw milk from the main herd. Later, however, they were bred to the herd bull and pastured in a community pasture, coming in contact with other cattle which were possibly infected with abortion disease, and this may account for the disastrous results which followed as shown below:

Year	Abortions	Normal Parturitions	Percentage Abortions
1916 . . . . .	3	51	5.5
1917 . . . . .	5	106	4.5
{ 1918 . . . . .	28	95	22.7
{ Mature cows . . . . .	6	67	8.2
{ Heifers . . . . .	22	28	44.0

Heifer calves had never been raised on this farm until the beginning of this experiment; 1918 shows the results from first lot of heifers.

#### HERD B.

Care, management and treatment was similar to herd A with this difference, that new cows were added but once (1917) in the three years, and the calves instead of being pastured in a community pasture were kept in a separate lot on the same farm but the segregation was not absolute. The following is a summary of the results:

Year	Abortion	Normal Parturitions	Percentage Abortions
1916 . . . . .	11	37	22.9
1917 . . . . .	17	30	36.1
{ 1918 . . . . .	4	43	8.5
{ Mature cows . . . . .	2	33	5.7
{ Heifers . . . . .	2	10	16.6

## HERD C.

No new cattle added, as a sufficient number of young stock were raised. The cows about to calve were removed to a barn constructed for that purpose, while the aborters were isolated on another farm until the end of a normal period of pregnancy. The sheath of the bull after each service, the external genitals, thighs, and tails of the cows, also the floors and walks of the stable, were daily washed with an antiseptic solution. The calves were stabled near the main dairy barn and fed raw milk from the herd until they were four to six months of age. At the expiration of this time they were removed to another farm where they were kept until ready to breed. Then they were returned to the main barn, bred to the herd bulls and kept there during their period of pregnancy. The above system of management was in effect up to 1916 but in spite of all these precautions the disease was not checked.

Since March, 1916, all aborters and those calving normally have received the uterine douche, the aborters being returned to the main herd as soon as the reproductive organs were in a healthy condition. The calves instead of being returned to main herd to be bred—as was the practice prior to this time—were kept on a separate farm until within two weeks of calving time; thus a system of complete segregation was practiced.

The following is a summary of the results of this system of management:

Year	Abortions	Normal Parturitions	Percentage Abortions
1906 . . . . .	2	17	10.5
1907 . . . . .	7	31	18.9
1908 . . . . .	9	50	15.2
1909 . . . . .	19	37	33.9
1910 . . . . .	6	67	8.2
1911 . . . . .	15	72	17.2
1912 . . . . .	7	62	10.1
1913 . . . . .	12	91	11.6
1914 . . . . .	18	66	21.4
1915 . . . . .	14	87	13.8
1916 . . . . .	10	87	10.3
1917 . . . . .	6	78	7.1
1918 . . . . .	3	79	3.6

## RECORD OF HEIFERS IN HERD C. UNDER PRESENT SYSTEM OF MANAGEMENT.

Year	Abortions	Parturitions	Abortions
{ 1916 . . . . .	1	18	
{ 1917 . . . . .	None	23	
{ 1918 . . . . .	None	23	

Prior to 1916 a large percentage of the heifers aborted each year.

The above figures indicate that raw milk from an infected herd has no deleterious effect, as far as contagious abortion is concerned, when fed to calves, and that the most effective means of preventing abortion is early separation and isolation.

Some of the cows that received the uterine douche aborted, indicating that the uterine douche is either not a specific treatment for this disease or that the methods of administering same must be improved.

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### **SPECIAL REPORT ON THE HISTO-PATHOLOGY OF GLANDERS.**

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BY CAPTAIN HADLEIGH MARSH, V. C.

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In the work of the Department Laboratory at Fort Sam Houston on the laboratory diagnosis of glanders, it has been found that in some cases positive glanders lesions have been reported by field veterinarians upon post mortem examinations of horses which have been negative to the serological test. While these discrepancies may in some cases be explained by the fact that cases showing old healed lesions may properly be negative to serological tests, there is another factor to be considered, which is the correct interpretation of post mortem findings. That is, the question arises whether lesions reported as glanders nodules may not in some cases be caused by something else.

An attempt has been made to check by laboratory examination as many post mortem findings as possible. Since all the animal inoculations from glanders specimens received at this laboratory have been negative, the importance of establishing a diagnosis by microscopical examination of the tissue has been realized. In this connection it was found that the descriptions of the histology of glanders lesions in the literature available at this station were indefinite and somewhat contradictory. Therefore it is thought that a report on the findings in the tissues that have been submitted to this laboratory might be of value. It is regretted that this work was not taken up a year ago when a large number of specimens could have been obtained and preserved for histological study. None of this work was done during 1918, and during the first six months of 1919, only twenty-six tissue specimens have been received at this laboratory for examination for glanders. Of these only fifteen were suitable

for sectioning, and only a few were received in condition permitting of perfect fixation and imbedding. Of the fifteen specimens, taken from twelve horses and mules, which were sectioned, nine were negative as far as microscopic examination is concerned.

The six tissues which showed in the sections lesions which were considered to be caused by glanders were taken from five animals, all of which had given positive reactions to the intradermic mallein test. Guinea pigs were inoculated, with negative results in every case. The tissues were fixed in formalin and imbedded in paraffine, and the sections were stained with eosin and hematoxylin. In three of the cases the sections were also stained for bacteria by Loeffler's method, but no organisms were found in any case.

In connection with this series of tissues, glanders nodules in three guinea pigs inoculated with pure cultures of the glanders bacillus were studied and compared with those found in horses. It should be noted that the condition in the horses was chronic, while the guinea pigs developed acute glanders and were killed in three to five days after inoculation. However, in the absence of material from horses having experimental glanders, the known glanders lesions in the guinea pigs were of some value for comparison.

The following is a detailed description of the sections of each of the six positive specimens:

#### SPECIMEN No. 11.

This specimen was a nodule from the lung of a horse which was destroyed for glanders on a positive intradermic mallein test. This nodule showed no calcification, and was apparently active.

Guinea pig inoculations were negative.

The lung tissue is replaced by a fibrous connective tissue nodule, the section showing seven foci of inflammation imbedded in the connective tissue. Each focus consists of a central necrotic mass, sharply circumscribed, approximately circular in shape, and taking the eosin stain very deeply. At the center of the necrotic area is a small circular opening, containing a little amorphous material.

Immediately surrounding this necrotic area is a thin connective tissue capsule. Outside this there is a wider zone containing a few connective tissue cells, with lymphoid cells, large mononuclears, some polymorphonuclear neutrophiles, and a few

eosinophiles. Beyond this zone is the main body of the lesion, consisting of connective tissue, infiltrated with lymphoid cells, epithelioid cells, a few polymorphonuclear neutrophiles, and a very large number of eosinophiles.

In some of the nodules, between the necrotic mass and the connective tissue capsule, there is at one side a narrow area consisting chiefly of polymorphonuclear neutrophiles.

The walls of the blood vessels are much thickened.

No bacteria were found in sections stained with Loeffler's methylene blue.

#### SPECIMEN No. 24.

This tissue was from a mediastinal lymph gland from a horse destroyed for glanders on a positive intradermic mallein reaction. The tissue was received packed in borax, and was not in good condition to fix for imbedding.

Guinea pig inoculations were negative.

The sections of the lymph gland showed an area containing several small nodules which had become partially calcified. Surrounding the calcified centers there were fibrous connective tissue nodules, with a small amount of active tissue containing a large number of eosinophiles.

There was a small amount of lung tissue attached to the gland, sections of which showed bronchitis and thickening of the alveolar walls. The bronchi showed a desquamation of epithelium, the lumen being nearly filled with epithelial cells. Immediately surrounding the bronchus is a fibrinous exudate, with some connective tissue cells, and an infiltration of lymphoid and epithelioid cells, and many eosinophiles. The walls of the alveoli all through the section are thickened by a similar exudate. The walls of the blood-vessels are hypertrophied.

No bacteria were found in section stained with Loeffler's methylene blue.

#### SPECIMEN No. 25.

This specimen was from the liver of the same horse from which No. 24 was taken.

The sections showed two nodules just beneath the capsule. Each nodule contained a central necrotic mass which was partially calcified. Surrounding this central mass was a connective neutrophiles, epithelioid cells, many large mononuclear cells and a great many eosinophiles. Outside this zone is another

tissue capsule. Outside this capsule is an incomplete zone consisting of connective tissue infiltrated with polymorphonuclear composed chiefly of connective tissue, beyond which are the liver cells.

Scattered through the liver near the nodules, are small areas of connective tissue reaction around the small bile ducts and polymorphonuclear eosinophiles are frequently found among the liver cells. The liver cells show cloudy swelling.

#### SPECIMEN No. 26.

This was from the spleen of a mule destroyed for glanders on a positive intradermic mallein reaction. This material was received packed in borax, and in poor condition for sectioning. It was hardened in formalin and the sections stained with hematoxylin and eosin.

Guinea pig inoculations were negative for glanders.

The sections showed that the spleen capsule and the trabeculae were very greatly thickened. There was one nodule just beneath the capsule, consisting of a necrotic, partially calcified center, surrounded by dense connective tissue. The spleen pulp next to the nodule was congested and contained a large number of eosinophiles.

#### SPECIMEN No. 27.

This was from the intestinal wall of a horse destroyed for glanders on a positive intradermic mallein test. The specimen was received packed in borax, and was in poor condition for fixing and imbedding.

Guinea pig inoculations were negative for glanders.

The sections showed a nodule in the outer muscular coat, consisting of a central necrotic mass, partially calcified, surrounded by a connective tissue formation, infiltrated with a large number of eosinophiles. Throughout the mucosa, submucosa, and outer muscular coat, there is a very great number of eosinophiles, and also an increase in connective tissue cells.

#### SPECIMEN No. 28.

This specimen was a group of mediastinal glands from a horse destroyed for glanders on a positive intradermic mallein test. The glands themselves did not show any lesions, but in the fatty tissue adjacent to them was a fibrous nodule containing several small foci and two very small points of cal-

cification. This tissue was received packed in borax and in excellent condition so that it was possible to imbed and section it perfectly.

A portion of the normal appearing gland tissue was inoculated into a guinea pig with negative results.

The sections show that the lesion consists of a fibrous tissue nodule about twelve mm. long by six mm. wide, of an irregular shape, with strands of connective tissue running out into the surrounding fat. The nodule contained a number of small foci or nodules of irregular shape, tending to be circular, imbedded in a connective tissue matrix. This matrix consists of fibrous connective tissue with epithelioid cells, some lymphoid cells, and a very large number of eosinophiles.

The older nodules consist of a sharply defined central mass, more or less circular in shape, taking the eosin stain very deeply. Degeneration of the cells has taken place, leaving the nuclei intact, and all of the nuclear material staining with hematoxylin. Most of the nuclei appear to be from lymphoid cells and polymorphonuclear leucocytes. There are a few intact eosinophiles. At the center of the nodule is a small circular opening, containing some amorphous material.

Immediately surrounding the central mass is a narrow zone consisting chiefly of connective tissue and epithelioid cells. Outside this is a wider zone in which lymphoid cells predominate, with many epithelioid cells, large mononuclear cells and eosinophiles. Outside this zone is the main body of the lesion, where eosinophiles predominate, in a connective tissue matrix.

There are some small foci in this connective tissue formation in which connective tissue cells are absent, and there are only a few eosinophiles. The foci consist of lymphoid cells chiefly, with a few large mononuclear and epithelioid cells.

In some of the smaller foci, it appears that the eosin staining mass at the center consists of the freed granules of eosinophiles, with nuclei still staining but free from the cytoplasm.

The walls of the blood vessels in the nodule are greatly thickened.

Sections stained with Loeffler's methylene blue and Goodpasture's stain failed to show any bacteria.

Sections were made of the omentum of guinea pig 265 and of the testicles of guinea pigs 246 and 258. Nodules of the same character were found in all sections but the most marked reaction

occurred in the omentum of guinea pig 265. A detailed description of the lesions in the omentum follows:

The sections show numerous small nodules, some distinct and some confluent. In general, they assume a circular shape, but the reaction extends out into the loose tissue in irregular areas. The center of each nodule consists of an accumulation of lymphocytes, polymorphonuclear neutrophiles, some eosinophiles, and a large amount of free chromatin granules and broken down cells. Around the periphery of the nodule are epithelioid cells infiltrated into the connective tissue framework of the omentum. At the edge of the nodule the connective tissue cells are compressed, forming a marked limiting zone.

The larger nodules show in some portions a great number of eosinophiles, especially along the border of the nodule.

In some of the nodules is found the peculiar type of giant cell described by Mallory as characteristic of glanders. This consists of a large lobulated cell body containing several nuclei. In these sections the appearance was that of several mononuclear cells being fused.

In these sections the lymph channels are greatly distended, and the glanders nodules apparently develop along the course of these channels. The blood vessels of the region are injected.

Loeffler's methylene blue stain shows the glanders bacillus in great numbers throughout the nodule, but not in the surrounding tissue.

All six specimens show the same pathological condition in general, with slight variations due to differences in the tissue involved and the age of the lesion. The general nature of the lesion is that of a chronic inflammatory reaction to infection. The lesions usually consist of several foci of inflammation imbedded in a fibrous connective tissue nodule of irregular shape. Each focus has at its center a sharply circumscribed necrotic mass, approximately circular in shape. This is surrounded by a connective tissue formation infiltrated with eosinophiles. In most of the sections there is just outside the necrotic area a zone consisting mainly of lymphocytes, polymorphonuclear neutrophiles, epithelioid cells and large mononuclear cells. In part of the nodules the central necrotic mass is partially calcified.

In comparing the type of lesion found in the horses with those described in the guinea pigs, we find sufficient resemblance

to warrant the assumption that the one is the chronic condition due to the same infective agent as the acute condition in the other. In the guinea pig nodules there is no sharply defined necrotic center, but the cells at the center of the nodule are degenerating, and the necrotic center would probably develop if the disease became chronic. The formation of connective tissue so prominent in the chronic lesions is also absent in the nodules from the guinea pigs. Except for the absence of new connective tissue in the acute lesions, the types of cells forming the nodules and the form and distribution of the nodules, are very similar in both cases.

A very striking characteristic of all the tissues from the horses was the very great accumulation of eosinophiles. As this was a condition which is not described as occurring in glanders, and as Hutyra and Marek mention the presence of large numbers of eosinophiles as diagnostic of parasitic nodules, quoting Schütz as saying that eosinophile cells absolutely do not occur in glanders nodules, it was thought that some of the lesions being reported as glanders were really parasitic. This view was given support by the fact that all our guinea pig inoculations were negative and we were unable to find bacteria in the sections. But study of the acute lesions in the guinea pigs showed that known glanders nodules contain large numbers of eosinophiles. This was not found to be true in the smallest nodules, but in the larger ones eosinophiles were present in very large numbers indicating that the number increases as the lesion gets older.

As a result of this study, it appears that in the six specimens studied the pathological lesions were all of the same type, and showed characteristics which were distinct from those of any other condition. It has been assumed that the glanders bacillus is the cause of this lesion, as the animals all reacted positively to the intradermic mallein test, and the guinea pig nodules corresponded to those in the horses as closely as an acute condition could correspond to a chronic state.

If our conclusion is correct that the nodules described above are glanders lesions, it should be possible to confirm a post mortem diagnosis by microscopical examination, providing that calcification of the nodule has not become complete.

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### VETERINARIANS SHOULD ADVOCATE HUMANE METHODS.

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By W. G. HOLLINGWORTH, Utica, N. W.

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Shakespeare says "The humane way is the best." Tenderhearted, kindhearted, compassionate, sympathetic, humane, should be the war cry of every veterinarian. They all express active endeavors to find out and relieve suffering and especially to prevent it. He should stand as an index or representative, a leader of a party who advocates such a procedure.

The veterinarian depends upon the dumb animals for a livelihood to a very great extent. The necessity of their care and protection to him is of the most vital importance. To him the community is now looking for such action, as they too depend on the livestock interest to a very large extent for food and clothing and on such interests depend much of the prosperity of this nation, as agriculture is the foundation of such, and without livestock agriculture would be at a low ebb. It behooves us as guardians of health of such interests to act in such a capacity to build a suitable structure upon the foundation laid for us at the school from which we received our degree. If we do not comply with the teachings laid down, although not in a course of lectures, but alluded to at different times, by the many lecturers, calling attention to the practicing of humane methods, it is no fault of the college. The faculty did their duty, it is for us to make good. Today the veterinarian is looked upon as a person of intellectual ability, a promoter of methods that will increase his standing in the estimation of the community within his jurisdiction. He today is an authority, his opinions are sought, his decisions bear weight, much differ-

ent than former days, when they were looked upon with disrespect, a man who had no feeling for our dumb friends, a heartless wretch. But mind you, I am not saying that all veterinarians are inhumane, but believe me there are many of them. There can be no work more elementally benevolent than that which seeks to help those who cannot help themselves, nor recompense you for the aid you gave them. When a human being looks at the suffering of the inferior animals and with a heart full of love seeks to alleviate those sufferings, he is patterning after a true conception of boundless munificence and love and philanthropy of the good and great creator of all. Such a man or woman cannot be otherwise than kind to all, for if sympathy is deep enough to reach the lower animals, surely it will include the higher or human as the greater sentiment includes the lesser, and what an exalted place our profession would attain to if such benevolence and sympathy could be made common among us all, and who dare say such a condition of things is unrealizable when we look at the progress of the humanitarian views in the last few years. Deeply imbedded in man's nature, stultified and covered up oftentimes by lack of forethought, lie unexplored sources of good which may yet be developed into incalculable blessings to man in the care and love to animals. All that is needed is to sow the seeds of humanitarianism on the deep fruitful soil and not on the surface. To get rid of cruelty, whether expressed toward a child or animal, which is an indulgence in the lower impulses that remain as a reminder of barbaric times, the cruel veterinarian does more than inflict unnecessary pain on his subject, he injures himself. The impulse that leads him to cause uncalled for suffering to the dumb beast, is the same that raises his hand brutally against his own offspring.

The progressive veterinarian of today is fast adopting anesthesia, both general and local in his daily practice. Prof. Wooldridge said, in a broad sense the term means a suspension of sensation whether due to disease or injury. The chief use of anesthesia is the abolition of pain during operations and the prevention of various reflexes and muscular relaxation. We are using anesthesia not only to operate but to make a more perfect diagnosis. Our clients are asking and some demand such. Their investment demands the most efficient procedure. The

idea of a client objecting to the small extra expense is fast fading away and it is a poor excuse for the veterinarian to fall back on. They are fast advocating the abolition of pain as the advantages of general and local anesthesia are becoming so plain to the owner and operator. The time is not far distant when it will be compulsory and I will be one of those who advocate it, that no operation involving pain should be performed without the assistance of an anesthetic or an analgesic. A great many of us should study respiratory anesthesia more generally and become more proficient in its use. I am of the opinion that many of us are too timid for fear of unpleasant results. That can be overcome by experience. I do not think that a veterinarian should depend upon an inexperienced assistant, rather do it himself. I have always done my own anesthetic work, it takes time I admit and some expense, but the pleasure is yours. Patient, quiet, insensible to pain, client well satisfied and a legitimate way of bringing your name before the public as a humanitarian, which is the public sentiment now days. To me the veterinarian who practices surgery without alleviating pain to a minimum, is not doing his duty to himself, family, community, college from which he graduated, client nor patient, and to my way of thinking he ought to be the subject of censure. There is no reason under the sun why we should torture our dumb animals, because we can put them in such positions under restraint. They are very sensitive to pain. While it is under our power to relieve them, why should some persist to so act. How often we read articles in our veterinary journals written by men high in our profession, advocating operating under methods without relieving pain or torture first. This is very painful to me and others who believe as Shakespeare did that "The humane way is the best". There is just as much humanity in caring for the sick animals as those who are subject to operation to see to it that our patient receives the proper care and sanitary conditions, and here is where the veterinarian ought to be an educator, to instruct the caretakers to act in as humane a manner as possible so as to give the poor dumb creature such care as is necessary for his or her comfort, whether the result is convalescence or death. One of the greatest acts of humanity that can be performed on our dumb friends is in their destruction at the proper time. To this the veterinarian

must be judged. Here his opinion is asked very frequently, and here is where he must be a student of conditions. His sense of observation must be very keen. Would it not be better to destroy at once rather than to have his patient bear the pain of suffering if an invaluable animal is the outcome? Here again the veterinarian should educate himself to be governed by his first impression which if this motive has been his constant study and thought during his professional career, it will be the most lasting and to a very large extent the most correct. Now how is this to be done the most humane way whatever that may be and that may differ under different conditions. Alleviate the pain and suffering as soon as possible with the least pain and excitement and here is where you will get the good will of the sympathetic owner and looker-on. Now in regard to the sympathetic person. Sometimes they go to extremes, overdo it so to speak, can only see humanity from one side, in fact some do not want to take the other side into consideration. To my way of thinking, to cause slight pain or inconvenience is far less harmful and more humane than to let conditions go on unattended to whereby results may occur which may cause the worst kind of agony and death to untold numbers, whether it be to the human or brute family. Now I believe the true humanitarian ought to be broad minded enough to take all things into consideration and look at humanity in the sense of prevention, and that is the age we are living in now. Prevention is better than cure. There is a vast difference today in regard to the methods of experimental medicine as compared with that practiced years ago and that is due to the teachings of the practice of humanity where ever possible. No one now a days is going to practice animal experimentation just from choice, but unfortunately there is no alternative. I am at the head of a humane society in my city and surrounding towns and believe I have as true humane feelings as one can have, in fact it is natural, being placed in the position that I am through my profession, and see the things I do and know the consequences, which would have occurred through lack of knowledge, and still there is more to learn and will continue as long as our great aim is prevention. It makes me feel that the sufferings of a few is more humane than to allow scourges to sweep the land, carrying sickness and suffering of incalculable numbers and a great many deaths.

Is it more inhumane to subject a few of the animals as I have mentioned for scientific purposes under as humane conditions as possible, than trap fur-bearing animals for their furs, shoot feathered birds for their plumage? To me it is not necessary to go into detail regarding the sufferings these animals have to endure. I personally have noticed some of these people who are so bitter against animal experimentation to adorn themselves with furs, feathers and birds, and think nothing of it.

I think if the American Veterinary Medical Association would take some action in regard to the practicing of humane methods among our patients, and let the public know it, it would be received with open arms by all persons interested in the welfare of animals, and one of the greatest assets our profession could receive.

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## THE PRESENT STATUS OF HOG CHOLERA CONTROL.

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At no time in the history of veterinary science in this country has the subject of diseases of swine been of more importance and greater interest than at present. One only need to look over the programs of the meetings of the various veterinary medical associations in the country and become readily impressed that the subject of controlling infections in hogs is given a great deal of attention and furthermore that there appears to be a greater confusion in our knowledge on such infections than at any time in the past few years.

The statement of Dorset that aside from hog cholera, other infectious diseases of swine in this country are negligible, has been refuted by some observers who claim that in certain localities losses from other infections surpass those sustained from hog cholera. Unfortunately up to date such statements have not sufficient conclusive scientific backing and we are still in the dark with regard to the significance of other diseases than hog cholera as being responsible for great losses among hogs.

The publications from the Bureau of Animal Industry in the past two years have shown conclusively that losses from hog cholera have been materially reduced through the use of Anti-Hog Cholera Serum and Virus, these statements being backed up by

conclusive statistical data. On the other hand the frequent reports of continuous losses in herds which have been vaccinated against hog cholera and also among hogs which have not been vaccinated, from infections of hemorrhagic septicemia and necrotic enteritis are indeed alarming.

The writer has attempted to obtain data to what extent these so-called mixed infections occur independently of cholera and followed up cases in which a primary diagnosis of either hemorrhagic septicemia or necrotic enteritis has been made on post-mortem and bacteriological findings, to note whether such diagnosis was justified. In about two-thirds of these cases, however, a subsequent diagnosis of hog cholera had to be made from post-mortems on animals which died in the progress of the outbreak.

There is no doubt but what we have at the present time a different condition in infections in hogs than at the time of the earlier hog cholera investigations. That is, we are confronted more frequently with complications or independent outbreaks with pathogenic organisms which were heretofore justly considered only as secondary invaders in association with virus cholera.

The question arises what has brought this change about. Various factors might be considered as being responsible for the apparent increased pathogenicity of some of the infectious agents. From our knowledge of pathogenic organisms, especially of those known to be facultative pathogenic, we know that by continuous animal passage they may increase their virulence to a very marked degree. This no doubt has been the case with some of the organisms now being met with in the various swine infections which condition might have been brought about by natural sequence such as occur in the ordinary course of epizootics as for instance in foot and mouth disease, hemorrhage, septicemia, influenza, etc. That is at the beginning of the outbreaks the disease is less virulent in type and gradually gains in intensity until the height of the curve is reached from which a gradual diminishing of virulence is observed. By passage through animals the so-called mixed infections in diseases of hogs might gain such an increased virulence and consequently they have now become by far more pathogenic than they have been in the past.

Another factor and to my mind a more important one whereby these so-called mixed infections are occurring now more frequently is due to the spread of the infection by so-called virus carriers. Virus carriers which are apparently healthy individuals are now being recognized to be the greatest menace to the sanitary police authorities and are probably responsible to a greater extent for spreading disease than any other cause. Thus in infectious diseases of man we are especially confronted with these sorts of spreaders. I only desire to mention typhoid fever, diphtheria, spinal meningitis and others in all of which the menace from virus carriers is greater than from the patient sick with the respective diseases.

Virus carriers in animals are also now being recognized as big factors in spreading contagions. Thus from all appearances normal animals may harbor the infection and at favorable opportunities communicate it to susceptible animals. Influenza, dourine, foot and mouth disease have been proven to be sometimes disseminated by such virus carriers.

In mixed infections of swine we have principally three groups or organisms which are especially responsible for infections and the characteristics of all these organisms more than suggests the probability that they may be present in individuals of so-called virus carriers and at favorable opportunities become factors in the dissemination of these infections.

Bacteriological studies of the bacterial flora of the respiratory and digestive tracts of hogs have shown that the hemorrhagic septicemia organisms, the *B. cholera suis* and the *B. paratyphosus* are present in apparently healthy hogs. Furthermore those who have had the opportunity to conduct many post-mortem examinations on apparently healthy hogs have very frequently noted small areas in the lungs undergoing hepatization which in many instances appear to be chronic in character. These consolidated areas on bacteriological examination frequently reveal the hemorrhagic septicemia organisms and since they occur in apparently healthy hogs they may be readily expelled through the passages and cause infections.

On the other hand the *B. cholera suis* and the *B. paratyphosus* are types of organisms which are known to remain in their pathogenic state in apparently healthy individuals. Investigations along this line have established this fact in human

beings and to a lesser extent in animals. The very frequent erosions and slight ulcerations around the ileocecal valve which are met on postmortem examination in apparently normal hogs have disclosed a remarkable variety of pathogenic and nonpathogenic organisms and no doubt these organisms being evacuated with the intestinal contents may under favorable conditions produce the characteristic lesions of these infections. The name of "mixed infection of hogs" is of course inappropriate, and I simply use the term at the present time as the veterinarians have become used to designating this condition under that name.

Finally one must not lose sight of the possibility that in the effort of controlling hog cholera by the extensive use of vaccination has probably resulted in increased resistance in our present hogs and that as a result of this the disease caused by the filterable virus becomes somewhat obscured and the secondary infections which have always been recognized in connection with hog cholera appear to be predominating. As a result our attention becomes distracted from the true etiological factor and in the absence of the typical cholera lesions the veterinarian is apt to make a diagnosis of either hemorrhagic septicemia or necrotic enteritis whereas actually the true original factor was the filterable virus.

The evidence may be summarized:

1. That we are not confronted at the present time with new diseases in swine.
2. That the infections aside from cholera represent pathological processes caused by organisms recognized before as being pathogenic to swine.
3. That due to some favorable conditions they have developed an increased virulence.
4. That due to the tremendous traffic in swine so-called carriers have contributed to the dissemination of these infections.
5. Finally that we must still recognize the filterable virus as being the most important factor as preparing the field for the other pathogenic organisms.

I have abstained from mentioning the so-called necrobacillosis since the introduction of this name has never been justified as there never was sufficient scientific data presented by which the *B. necrophorus* could have been incriminated as being the primary responsible factor for the intestinal necrotic infections

of hogs. On the other hand artificial infections with *B. cholera suis* and *B. paratyphosus* have successfully produced lesions commonly met with in intestinal infections of hogs. Thus the presence of the *B. necrophorus* at the best can be accorded only of secondary importance in such lesions.

It is not the intention to discuss the infections caused by germs pathogenic to hogs but it might be advisable to emphasize the fact that the lesions produced by them are occurring now with greater frequency and that their significance should not be underestimated. The control of these infections, however, is essentially a control of hog cholera and an effective and successful control of hog cholera would result in a very pronounced diminishing of the other infections.

Hog cholera control has been exhaustively treated in bulletins and scientific articles appearing in our journals. The disease and its prevention is familiar to most every one interested in the treatment of swine diseases; yet on account of the variations of the symptoms and lesions disclosed by the animal affected with the disease even the most experienced veterinarian is at times at a loss to make a definite diagnosis either from observation of symptoms of a single or several postmortem examinations. This is no doubt due to the fact that the disease manifests itself in many different forms. In some instances it is peracute; other times subacute, and may even develop into a chronic form. The symptoms and lesions vary accordingly and become more or less obscure, and due to this fact the uncertainty of a definite diagnosis by the veterinarian is so common.

In the majority of cases, however, the observation of sick animals together with postmortem examination should enable the veterinarian to make a diagnosis. All evidence of the symptoms and lesions should be carefully weighed and if possible the diagnosis should not be delayed. Temperatures should be taken of all animals which very frequently aids materially in the diagnosis. The absence of pathogenic lesions of hog cholera should not necessarily be accepted as conclusive and in such instances the condition of the balance of the herd should be given careful consideration.

In case of any doubt whether the animals are affected with cholera or some other infection the owner should be advised that delay in waiting for definite signs might prove costly and the

veterinarians should suggest the treatment of the herd for cholera.

A differential diagnosis in favor of hemorrhagic septicemia or other forms of mixed infections should not be made unless sufficient evidence is present to justify the same. That is, in case hog cholera can be excluded by the fact that the animals have been properly vaccinated with potent serum or virus; or if the symptoms of hemorrhagic septicemia or intestinal infections are found to exist in several hogs without any indication of a hog cholera infection.

It is impossible to enter into detailed description of the differential diagnosis within the scope of this paper but this phase of the subject has been exhaustively treated in the up-to-date textbooks and also in special publications. However, emphasis is placed again upon the importance not to be misled by the absence of characteristic lesions of cholera and render a negative diagnosis.

Since the essential feature in the control of hog cholera is now recognized and accepted to consist of sanitary measures and prophylactic treatment of the animals with Anti Hog Cholera Serum and Virus, it will be advisable to discuss briefly the method of procedure in preparing the products used in this treatment and the method of administering the same. It has been definitely established that Hog Cholera Serum is one of the most reliable biological products at our disposal, but at the same time we cannot deny the regrettable fact that the development of the laboratory aspect of this product has been lagging far behind and that very little progress has been made in producing this product in an improved manner to justify its wonderful effectiveness in the control of this dreaded disease.

It should be considered that in the prevention and treatment of a disease of so vast importance to the country's live stock industry as hog cholera, the product used for its control should be beyond reproach especially so since the effectiveness of the treatment is being justly recognized.

It is undeniable that all establishments engaged in the production of Hog Cholera Serum are making all efforts to produce a potent product, but as it is produced today by most of the laboratories it represents only defibrinated blood from hyperimmunized hogs, a product in its very crudest stage of develop-

ment as far as the physical make up and its freeness from contaminating germs is concerned.

The production of a clear Hog Cholera Serum without the presence of corpuscular elements of the blood was practiced in different countries of Europe and also in isolated cases attempts were made in this country to produce such a product. The small yield obtained from such blood was of the greatest detriment to engage upon the production of such clear serum by the different manufacturers. Dorset recognizing this fact as a disadvantage for the development of a clear Hog Cholera Serum undertook investigations along this line which developed in a method whereby practically all serum can be recovered from the blood of hyperimmunized animals and it is to his credit that such clear serum may be produced at a cost not much higher than the ordinary defibrinated blood.

In the method of preparation of Anti Hog Cholera Serum as is generally practiced it is impossible to prevent contaminations from outside sources; aside from this there is the possibility that the hyperimmunized animals may contain in their blood organisms which might prove harmful to animals injected with the product.

Furthermore, so-called bloody Hog Cholera Serum contains all the corpuscular elements of the blood which have no value whatever in the production of immunity, this fact having been conclusively demonstrated. It must be also recognized that when the corpuscles are injected with the serum they prevent quick absorption and act as irritants at the point of injection, frequently giving rise to abscess formation. Thus such serum has not fulfilled the requirements of an ideal and effective biological product.

Serum containing corpuscular elements cannot be properly sterilized neither by heat nor filtration, since when heated to a point where the ordinary pathogenic germs are destroyed it coagulates; whereas its Berkefeld filtration is out of the question. On the other hand clear serum can be readily sterilized by either of the methods and by such sterilization the ordinary pathogenic germs which are dangerous to hogs are readily eliminated and by freeing it of corpuscles it is rendered more easily absorbed, thereby insuring the maximum protection within the shortest time. The fact should not be lost sight of that by

eliminating the corpuscular elements from the hog cholera serum it may be injected in proportionally smaller dosage.

In advocating a clear and sterilized serum for the control of hog cholera it is not in the least the intention to discredit the serum which has heretofore been prepared. However, from a scientific point of view and in consideration of the technical advantages which the administration of a clear serum possesses should induce the manufacturers to enter upon the preparation of such a serum, especially so since the cost of production is not materially increased and only requires more skillful handling and greater care in the manufacture.

Ever since the writer studied the production of Anti Hog Cholera Serum in Hungary in 1909 he recognized the advantages of a clear serum and has not failed to point out its superiority on every occasion. It is surprising that up to date manufacturers have not changed their crude method in preference to a more up to date and satisfactory procedure. May I not point out the fact that there is no country abroad where a serum containing corpuscular elements could be sold; all these countries requiring in their specifications a clear serum. Surely there must be a reason for this. It is the writer's firm belief that the veterinarians would readily advocate and accept such a product if it would be available.

With reference to the virus there should also be an effort made to prepare the same in a more refined form and free of any possible contamination. The advantages of such virus are also apparent. However, in view of the fact that the animals receive only about 1/25 of virus to the amount of serum the danger from this source is not comparable with that arising from a contaminated serum.

As the control of hog cholera constitutes at the present time a very important part in the activity of the veterinarians, and as the writer believes that the foundation of the control is vaccination with a proper serum and virus, the producers in order to assist the veterinarian in his effort should aim to supply the profession with the best that is possible to produce.

The striking advantages of a clear and sterilized serum are:

Freedom from contaminating organisms and other foreign materials, avoiding complications and ill effects.

Refinement of the product, permitting rapid and complete absorption and giving maximum immunity in the shortest time.

Provision for cleaner and more accurate technic thereby simplifying the vaccination.

Sterility, promoting keeping qualities of the product.

It should also be recognized that a great deal depends on the proper technic in vaccination as the efforts exercised in the production of the product may become nullified by careless technic. Sanitation which should be also given due consideration does not offer any new problem and should be carried out in accordance with the sanitary requirements of the authorities for the control of this or any other highly contagious infectious disease.

The veterinarian in his effort to control hog cholera should give due consideration to every factor including proper diagnosis and prophylaxis since only by so doing and employing the best means at his disposal for the control of the infection can he expect to serve his clients as he should.

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## STUDIES ON ANTHELMINTICS.

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### IV. EXPERIMENTS WITH COMBINATIONS OF OIL OF CHENOPODIUM AND CHLOROFORM.

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Whether a combination of oil of chenopodium and chloroform might be a valuable one, has been discussed by Hall and Foster. They state:

"Various writers have advocated the use of chloroform in castor oil in connection with oil of chenopodium or other anthelmintics, and some have claimed a synergistic action for chloroform and chenopodium. We have not found any convincing evidence of synergistic action. Chenopodium has a certain anthelmintic value for hookworms and chloroform has a greater value; but we have not observed that the simultaneous use of the two drugs adds to the efficiency of the chloroform alone. However, the combination of chenopodium and chloroform is a valuable one, as the chenopodium can be expected to remove

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\*Resigned March 27, 1919.

ascarids, when these are present in hookworm cases, and ascarids are commonly present in such cases."

The experiments supporting the above comment on the combination of chenopodium and chloroform were later published by Hall and Foster as follows:

In one experiment, chenopodium was given in the dose of 0.1 mil per kilo, the single therapeutic dose, daily for a total of 6 doses. It was mixed with 10 times its volume of olive oil and preceded by castor oil in amount equal to the olive oil; 1 minim of chloroform per kilo body weight was added to the olive-oil-chenopodium mixture the first day and to the castor oil the following days. This treatment removed 8 out of 8 ascarids (100 per cent), and 94 out of 133 hookworms (71 per cent).

In a second experiment, 4 dogs were each given chenopodium and chloroform, each at the rate of 0.1 mil per kilo; the drugs were given in castor oil, from 12 to 40 mils, according to the weight of the dog. This treatment removed 7 out of 8 ascarids (87.5 per cent,) and only 7 out of 61 hookworms (11 per cent).

In a third experiment, the dose of each drug was doubled, being given at the rate of 0.2 mil per kilo, and in about 30 mils of castor oil. This treatment removed 100 per cent of the ascarids and over half of the hookworms.

Hall and Foster state that 0.1 mil per kilo of each of these drugs is too small a dose for the best results. It is the opinion of Hall, as stated elsewhere, that 0.1 mil per kilo is the proper dose of oil of chenopodium for use against ascarids, representing a dose which will seldom fall below 100 per cent efficacy, as smaller doses do too frequently, and which is naturally less toxic than larger doses. As for chloroform, the dose of this drug for dogs should certainly be at least 0.2 mil per kilo, and 0.3 mil per kilo is well tolerated.

The writer is now of the opinion that under suitable conditions of administration, a single dose of both drugs will secure better results than a single dose of either one alone.

The following experiments indicate that a single dose of 0.1 m. p. k. of chenopodium and 0.2 m. p. k. of chloroform gives very satisfactory results where the two drugs are both used in the same treatment and the chenopodium is given in the soft, or soluble elastic, capsule. In these

experiments, the dogs were given oil of chenopodium at approximately the rate of 0.1 m. p. k., so far as the dose could be approximated in the administration of soluble elastic 5- and 10-minim capsules, and were given chloroform at the rate of 0.2 m. p. k. in hard gelatine capsules, No. 00. The purgative, for which the kind and amount is specified, was given immediately after the other drugs. From what the writer has observed of the action of these drugs under these conditions, the chloroform would be very promptly released in the stomach; such purgatives as castor oil would rather promptly begin to pass out with their chloroform content, while such oils as olive oil would tend to remain in the stomach a rather long period; and the soluble elastic capsules, when given with castor oil, would digest or open in the stomach within a half hour or so. The castor oil in the stomach and its persistent purgative action in the intestine would carry along the chenopodium, whenever it left the stomach.

Dog No.	Wt.—Kilos.	Chen.—Mms.	Chlor.—m.p.k.	Purgative	Efficacy (%) Against				Digestive Tract
					Ascaris	Hook-worms	Whip-worms	Tape-worms	
23	11	15	0.2	Ol. ric. 30 mls.....	100				Normal
27	12	15	"	Ol. ric. 30 mls.....	75	0	100		Normal
28	17	25	"	Ol. ric. 30 mls.....	100				Normal
30	9	15	"	Ol. ric. 30 mls.....	100				Normal
31	6	10	"	Ol. olivae 60 mls. sod. sulph., 2dr.....			0	0	Gast.-ent. hem.
32	7	10	"	Ol. olivae 30 mls.....	100				Gast.-ent. hem.
33	8	10	"	Ol. olivae 30 mls. calomel 2gr.	100	57		0	Ent. hem.
34	9	10	"	Ol. olivae 30 mls. 2 C. C. pills	40				Ent. hem.
35	8.5	10	"	Ol. olivae 30 mls. Elaterin gr. 0.1.....	83			0	Normal
38	10	15	"	Ol. lini 60 mls.....	100	92			Ent. Infl.(mod.)
40	10	15	"	Ol. ric. 60 mls.....	100	100			Normal
41	10	15	"	Ol. ric. 60 mls.....	No conclusions.				Sickly animal; died
60	7	10	"	Ol. ric. 20 mls. Ol. olivae 20 mls.....			0	0	Inflam.
64	9	15	†20	Ol. coco. 30 mls.....	100		0		Inflam.
67	8	15	"	Ol. ric. 60 mls. in S. E. cap- sules.....	100		100	0	Inflam.
70	9	15	"	Ol. ric. 20 mls. Ol. olivae 20 mls.....			0	0	Hem.

†Minims

There are 16 dogs in the foregoing table, of which one, No. 41, must be disregarded in drawing conclusions, as the animal, a clinical case of uncinariasis, died the day following treatment,

too early to permit of anthelmintic action. The other 15 dogs had a total of 150 ascarids, an average of 10 per dog; 40 hookworms, an average of 5.6 per dog. Of these worms, the combined chenopodium (0.1 m. p. k.) and chloroform (0.2 m. p. k.) treatment removed 146 ascarids (97 per cent), 35 hookworms (87.5 per cent), 4 whipworms (12.5 per cent), and 1 tapeworm (1 per cent). These percentages for efficacy against ascarids and hookworms are high. The showing against hookworms is especially high for single dose treatments and is better than the average obtained by single doses of either drug alone. It is better than the result obtained by Hall and Foster in giving both drugs at the rate of 0.2 m. p. k. in 30 mls of castor oil. This result can hardly be regarded as a true case of synergistic action, something Hall and Foster have regarded as not present in the anthelmintic action of these drugs, but it is possible that treatments given in this fashion do allow one drug to supplement the other. As was noted already, the chloroform probably passes down the digestive tract promptly, mixed with the purgative, and is followed shortly afterward by the chenopodium. It is quite possible that worms that are not removed by the chloroform, but are weakened by a sub-lethal dose, succumb to the additional toxic effects of the chenopodium to which they are later subjected. Or it may be that some hookworms not killed by the chloroform are deprived of their fatty protective coating by the chloroform and so exposed to attack by chenopodium, or loosen their attachment to the mucosa, under the influence of the chloroform, and are caught in the lumen of the gut by the chenopodium. Unfortunately, we have only speculation on this subject at present. That the combination was efficacious here, however, is not a matter of speculation.

A consideration of the condition of the digestive tract in these animals shows the following: Leaving out of consideration Dog 41, which was too sick to tolerate treatment and cannot be regarded as a normal animal, 6 dogs had normal digestive tracts, 3 had inflamed digestive tracts, and 6 had hemorrhagic digestive tracts. Since the anthelmintic treatment was the same for all, the reason these findings may be sought in the purgation employed, since the eliminative and distributive action of such drugs as castor oil has been found protective by the writer against lethal doses of such drugs as chenopodium or

oleoresin of male fern, whereas the tendency of olive oil to remain in the stomach and be absorbed has been found to result in serious damage to that organ. These findings, published elsewhere by the writer, are confirmed by the findings here. Where castor oil alone was used, the digestive tract was normal five times and inflamed once; where olive oil was used, alone or with a diverse assortment of purgatives, the digestive tract was hemorrhagic six times and normal once; where other oils, coconut or linseed, were used, the digestive tract was inflamed twice. These findings confirm the desirability of using castor oil as a purgative with chenopodium, something which a number of writers have advised, though some have given a preference to Epsom salts. It is likely that either are satisfactory; the important thing is prompt and adequate purgation.

In the following experiments, the dose of chenopodium was cut to half the therapeutic dose of 0.1 m. p. k., or 0.05 m. p. k., the dose of chloroform being the same as in the preceding experiments.

Dog No.	Wt.—Kilos.	Chen.—Mms.	Chlor.—m.p.k.	Purgative	Efficacy (%) Against				Digestive Tract
					Ascaris	Hook-worms	Whip-worms	Tapeworms	
39	6	5	0.2	Ol. ric. 30 mils.....	100	75	....	....	Normal
42	14	10	"	Ol. ric. 60 mils.....	75	83	0	....	Ent. hem.
43	8	5	"	Ol. ric. 60 mils.....	100	....	0	100	Normal

In this diminished chenopodium dosage, the treatment removed 8 of a total of 9 ascarids (an efficacy of 89 per cent); 8 of 10 hookworms (80 per cent); none of 11 whipworms (0 per cent); and both of 2 tapeworms (100 per cent). While this is a good showing for ascarids, numerous experiments indicate that this smaller dose of chenopodium, 0.05 m. p. k., will fail in a distinctly larger number of cases than the larger dose of 0.1 m. p. k., and as this latter is well tolerated, it should be used. The efficacy of the treatment against hookworms is unimpaired, a showing in keeping with the undiminished chloroform dosage of 0.2 m. p. k.

The digestive tract was normal in 2 of the 3 dogs, and showed some enteric hemorrhage in the third. Castor oil, in 30 and 60 mil doses, was used.

One dog, No. 47, was given the therapeutic dose of chenopodium, 0.1 m. p. k., and a diminished dose of chloroform, 1.33 m. p. k. This dog weighed 15 kilos, received 20 minims of chenopodium, 2 mils of chloroform, and 60 mils of castor oil. It passed 6 ascarids and had 3 whipworms postmortem, an efficacy of 100 per cent against ascarids and 0 per cent against whipworms. There were some inflamed areas and some hemorrhage in the intestine.

In another series, the dogs were given double the therapeutic dose of chenopodium, or 0.2 m. p. k., with a therapeutic dose of chloroform, 0.2 m. p. k.

Dog No.	Wt.—Kilos.	Chen.—Mms.	Chlor.—m.p.k.	Purgative	Efficacy (%) Against				Digestive Tract
					Ascaris	Hook-worms	Whip-worms	Tape-worms	
49	14	40	0.2	Ol. gossyp. 60 mils.....	100	.....	.....	.....	Ent. inflam.; pyloric hem.
50	12	35	"	Ol. ric. 30 mils.....	100	.....	0	0	Gast.-ent. hem.
51	6	15	"	Ol. sesam. 60 mils.....	100	0	.....	.....	Ent. hem.
52	6	15	"	Ol. arach. 60 mils.....	100	.....	0	0	Gast. hem.

With this doubled dosage of chenopodium, the treatment removed all of the 35 ascarids present (100 per cent), and none of the other worms, including 1 hookworm, 10 whipworms, and 24 tapeworms (0 per cent). In the experiments already noted, chenopodium in doses of 0.1 m. p. k. and 0.05 m. p. k. removed 160 ascarids and failed to remove 5. While it might be thought that this established the larger dosage as the preferred one, it really does not do so. Experiments published by Hall and Foster show that chenopodium, in single doses of 3 m. p. k. or 3 doses of 0.2 m. p. k. each on successive days, will fail to remove occasional ascarids, and these failures are to be attributed, in the present state of our knowledge, to conditions of which we are unaware and over which we have at present no control. No safe dose of any anthelmintic known can be depended on to remove all worms present every time. This fact, coupled with the fact that anthelmintics are toxic substances which should be used with caution, makes the employment of the 0.1 m. p. k. dose of chenopodium advisable. The occasional deaths of weak animals, following the administration of conservative thera-

peutic doses of anthelmintics, inclines one to avoid larger doses than are necessary for reasonably dependable results, and these results can be obtained against ascarids with the 0.1 m. p. k. dose of chenopodium.

These single doses of chenopodium and chloroform removed a total of 43 out of 51 hookworms, an efficacy of 84 per cent. This is a very good showing against a worm that is difficult to remove, and these two drugs administered in the manner noted, give results superior to those obtained as a rule with either drug alone or with drugs other than these.

The failure of most treatments in these experiments to remove whipworms or tapeworms is to be expected. The drugs and the mode of administration are not appropriate for these worms.

The following experiments are intended to determine the efficacy of *repeated* doses of chenopodium and chloroform.

Dog No. 46, weighing 25 kilos, was given 20 minims of chenopodium in the soluble elastic capsule, with 2 mils of chloroform in hard capsules and 60 mils of castor oil. Six days later the dog was given 75 minims of chenopodium in soluble elastic capsules, with 5 mils of chloroform in 60 mils of castor oil, and six days later the dog was given this same dose again. Five days later the dog was killed. No worms were passed and 5 whipworms were found postmortem. Even such rather large doses, repeated at these intervals, were 0 per cent effective against whipworms, which is not surprising in view of the location of these worms.

In the following experiments, the dogs were given 3 doses of oil of chenopodium in soft, or soluble elastic, capsules, each dose consisting of the amount shown in the table and being given with 15 mils of castor oil or without the oil, as indicated. The last dose was followed after an interval of 1 to 1½ hours by 4 mils of chloroform in 15 mils of castor oil if the chenopodium was given with oil each time and 30 mils if no oil had been given. These experiments, briefly tabulated here, were published in full by Hall (1919).

Dog No.	Wt.—Kilos.	Chen.—Mms.	With ol. ric.	Efficacy (%) Against				Digestive Tract.
				Ascaris	Hook-worms	Whip-worms	Tape-worms	
289	21	10	Yes.....	100	86	.....	.....	Gast.-Ent. hem.
301	15	10	Yes.....	100	97	.....	.....	Gast. inflam., Ent. hem.
300	18	5	No.....	.....	50	.....	0	Few ent. petechiae.
292	14.5	5	Yes.....	.....	97	.....	0	Gast. inflam.

From an anthelmintic standpoint, this treatment was decidedly successful. It removed 6 out of 6 ascarids (100 per cent) and 127 out of 142 hookworms (89 per cent). In the 3 cases where the capsules were given with castor oil, the treatment was 91 per cent effective against hookworms. There were no whipworms present, and it failed to remove any of 17 tape-worms, a matter of no moment, as it is not a *tæniafuge* anyway.

As regards the effect on the host, it was especially bad in the case of Dog No. 301, but this dog had distemper when treated and died on the third day after treatment. The writer has pointed out elsewhere that dogs having distemper should not be given anthelmintic treatment until after they have recovered. While there was a production of inflamed and even hemorrhagic areas in the mucosa of the stomach and intestines, the condition was not serious and would have cleared up in the course of 10 days or two weeks. Compared with the damage done by hookworms, this is something that may be tolerated, and in view of the high degree of efficacy attained, the treatment outlined here would be the one indicated. It will be noted that where castor oil was not given with each dose of chenopodium, the efficacy fell to 50 per cent. The writer prefers the simultaneous administration of castor oil with the capsules. Our experiments show that the capsules given with castor oil will open in a half hour or so, so that the worms are first subjected to chenopodium and later to chloroform.

In the following experiments, dogs were given soluble elastic capsules each containing 5 minims of chenopodium and 10 minims of chloroform. The first series given will consider those dogs, 4 in number, which received 1 dose of these capsules, and the second series will consider those dogs, 11 in number, which received repeated doses.

The following dogs received these capsules to the number stated, followed immediately by 30 mls of castor oil.

Dog No.	Wt. Kilos.	Cap-sules	Efficacy (%) Against				Digestive Tract.
			Ascaris	Hook-worms	Whip-worms	Tape-worms	
95	14	4	.....	.....	0	.....	Inflam.
96	17	4	.....	0	0	0	Normal
97	9	2	.....	.....	0	0	Pyloric hem.
98	12	1	.....	53	.....	0	Gastric hem.

There were no ascarids present in these dogs. The treatment removed 8 out of 19 hookworms, an efficacy of 42 per cent. It failed to remove any of 9 whipworms and 44 tapeworms, an efficacy of 0 per cent against these worms. The digestive tract was normal once, inflamed once and there were hemorrhages in the stomach twice.

Apparently the combination of chenopodium and chloroform in the soft capsule is not as effective as the administration of chenopodium in the soft capsule, with the practically simultaneous administration of chloroform in the hard capsule or dissolved in the accompanying castor oil, or with the chloroform administered after an interval. Furthermore, the effect on the stomach suggests that where these two drugs are thoroughly dissolved in one another, the chloroform may hasten the local absorption of the chenopodium with bad results. It is probable, from other experiments, that the castor oil that might serve as a protection to the stomach against this combination, has passed out before this capsule opens. Probably the chloroform exerts a hardening effect on the gelatine. At any rate, the *simultaneous* administration of chenopodium and chloroform in this manner gives inferior results as regards worms removed and effect on the digestive tract, when compared with their practically consecutive administration as attained by the use of the soft capsules for the chenopodium only.

The following series comprises dogs receiving repeated doses of the soft capsules containing 5 minims of chenopodium and 10 minims of chloroform. All dogs received 1 capsule at a dose and 30 mls of castor oil with each dose.

Dog No.	Wt. Kilos.	Doses	Intervals	Efficacy (%) Against				Digestive Tract
				Ascaris	Hook-worms	Whip-worms	Tape-worms	
245	13	2	3 days	100	25			Normal
243	10.5	2	4 days		100			Normal
238	9	3	4 & 3 days	100	42	90		Gast.-Ent. hem.
239	10.5	5	4, 3, 4 & 2 days		75	79	100	Gast.-Ent. hem.
230	8.5	5	4, 6, 5 & 2 days	100	89			Gast. hem.
183	11.5	6	(In 8 days)	100			0	Gast.-Ent. hem.
184	5.5	7	(In 8 days)					Gast.-Ent. hem.
182	8	7	(In 8 days)	100				Gast.-Ent. hem.
181	13	7	(In 8 days)		100	100		Gast.-Ent. hem.
177	15	7	(In 8 days)			100		Gast. hem.
175	19	7	(In 8 days)		100			Gast. hem.

These treatments removed 56 out of 56 ascarids (100 per cent); 45 out of 64 hookworms (70 per cent); 50 out of 59 whipworms (85 per cent); and 1 out of 2 tapeworms (50 per cent). The digestive tract was normal twice, following 2 doses, and showed gastric hemorrhage in the other 9 dogs, following 3 to 7 doses, coupled with enteric hemorrhage in 6 of these cases.

A consideration of the above table and summary indicates that repeated doses of soft capsules containing 5 minims of chenopodium and 10 minims of chloroform are entirely efficacious against ascarids, as would be expected. They are only 70 per cent effective against hookworms, a high efficacy compared with chenopodium or chloroform alone in single doses, but not so high as the efficacy (87.5 per cent) attained by single dose treatments where oil of chenopodium is given at the rate of 0.1 m. p. k. in soft capsules, and chloroform is simultaneously given at the rate of 0.2 m. p. k. in hard capsules with 30 mils of castor oil or dissolved in the castor oil, or the efficacy (89 per cent) of 3 doses of chenopodium at hour intervals followed by chloroform 1 to 1½ hours later. It may be noted that in these repeated doses the individual dose was less than the therapeutic dose of 0.1 m. p. k., as it must be in repeated doses. At the same time, the condition of the digestive tract indicates that this combination of drugs is not well suited to repeated doses, being too irritant. The high efficacy against whipworms (85 per cent) is to be expected, as the keynote to treatment for infestation with this worm is repetition, a fact that the writer has pointed out in previous articles. The irritant character of chenopodium and chloroform makes them unsuitable for repeated doses and they are best used in single dose

treatments or treatments calling only for repeating doses during the course of a few hours of one day. Santonin, on the other hand, has too little efficacy in single dose to be as valuable as chenopodium for ascarids and is of no value for hookworm treatment, but the fact that it does not act as a gastro-intestinal irritant makes it the drug of choice where whipworms are concerned, since it can be safely given in the repeated treatments which are necessary to ensure some of the drugs finally entering the cecum and removing the worms (safely, that is, so far as gastro-intestinal irritation is concerned).

Experiments with these soft capsules, containing 5 minims of chenopodium and 10 minims of chloroform, after they had been enteric-coated by exposure to formalin, have been detailed in another paper. The results were unsatisfactory.

#### SUMMARY.

The best results in the removal of hookworms by a single dose treatment of which the writer is aware, were obtained by the use of oil of chenopodium in a dose approximating 0.1 m. p. k., as near as the dose can be approximated in 5- and 10-minim soft, or soluble elastic, capsules, followed immediately by 30 mils of castor oil containing chloroform at the rate of 0.2 m. p. k. or with this amount of chloroform given in hard gelatine capsules. Apparently the results so obtained are due to consecutive action which approximates treatment by repeated doses, as the chloroform in castor oil acts very promptly against the worms, and the chenopodium only after its release at some interval from the soft capsule. The treatment was 87.5 per cent effective in tests on 15 dogs, of which 6 had hookworms.

This same treatment was 97 per cent effective against ascarids in tests on 15 dogs, of which 9 had ascarids.

The treatment was comparatively ineffective against whipworms, which require repeated treatments, not single treatments.

The treatment was also ineffective against tapeworms, but neither of these drugs is dependable against tapeworms.

Very satisfactory results were also obtained by administering 3 doses of 5 or 10 minims of chenopodium in the soft capsule at hour intervals, accompanied each time by 15 mils of castor oil, and followed 1 to 1½ hours later by 4 mils of chloro-

form in 15 mls of castor oil. This treatment was 91 per cent effective against hookworms in tests on 3 infested dogs.

The same treatment was 100 per cent effective in tests on 2 ascarid-infested dogs and may be depended on to maintain substantially this efficacy.

These results bear out the claims of Schüffner and Verwoort for the treatment used by them in Sumatra. They gave 3 doses of oil of chenopodium, in 16-minim doses on sugar, at hour intervals and 2 hours after the last dose gave 17 grams of castor oil and 3 grams of chloroform. Our experiments indicate that the patient is better protected when each dose of chenopodium is accompanied by castor oil, otherwise a treatment approximating treatment used by Schüffner and Verwoort should be the best treatment for hookworms in man of those yet published, so far as our experiments indicate.

The simultaneous administration of chenopodium and chloroform by giving a soft capsule containing both of these drugs in the proper proportion, is unsatisfactory. In single dose the combination does not display enough efficacy, and in repeated doses the efficacy is less against hookworm, the particular work for which this combination is intended, than the single dose using soft capsules for the chenopodium only. It shows the increased efficacy against whipworms that may be expected from repeated doses, but shows a corresponding degree of injury to the gastro-intestinal mucosa that makes it undesirable.

#### REFERENCE.

- Hall, Maurice C. 1919. Practical methods of treatment for worm infestation. *Jour. Amer. Vet. Med. Assoc.*, v. 8 (1), April, pp. 24-45, 1 fig.

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A special course on Humane Laws and Regulations, under the auspices of the American Red Star Animal Relief, will be instituted in October at the New York State Veterinary College, New York University. Dr. W. W. Yard, of Denver, Colo., late of the Army Veterinary Service, will deliver this series of lectures.

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Dr. Cheston M. Hoskins, Vety. Dept. University of Pennsylvania, will lecture this session upon Feline Medicine at the New York State Veterinary College, New York University.

## CLINICAL AND CASE REPORTS.

### AN ESTIMATE OF THE NUMBER OF CYSTS IN A CASE OF PORK MEASLES.

MAURICE C. HALL, Ph. D., D. V. M.  
Senior Zoölogist, U. S. Bureau of Animal Industry.

Through the courtesy of Dr. H. K. Walter, the local inspector in charge at Washington, D. C., the attention of the writer was called to a case of pork cysticercosis at the abattoir at Rosslyn, Va. The animal in question had been held by the inspector, Dr. Wm. F. Davis, on July 17, 1919. An examination of the carcass showed the following:

The carcass was that of a young animal, weighing, with the head and viscera removed, 56 pounds. The meat was riddled with cysticerci and the skin raised in places, notably about the shoulders, by the accumulation of cysts. All the customarily infested sites, such as the tongue, diaphragm, psoas, neck muscles and heart, were heavily infested, but there was little to choose between these portions and the hams, shoulders, and other portions of the skeletal musculature. As usual in such cases various other viscera as well as the heart were also involved in the infestation, including the esophagus, thoracic and cervical lymph glands, stomach, spleen, and cerebrum. No cysts were found in the cerebellum, spinal cord, lungs, liver, kidney, small intestine, or abdominal lymph glands. The eye muscles and orbital tissues were affected but no cysts were found in the interior of the eyeball.

This case offered an opportunity of making an estimate of the number of cysticerci that might be present in a case of heavy infestation. A piece of ham, weighing 5 grams, was dissected and the cysts, 70 in number, removed. The remaining muscle weighed 2.5 grams, showing that approximately half the weight of the muscular portion of the carcass was made up of parasites. In 56 pounds of eviscerated headless carcass, it would be conservative to say that the musculature made up more than half the weight. Chauveau states that the skeletal musculature makes up half of the body weight. In this animal there was very little fat of any sort and the viscera were re-

moved, as was the head, with its considerable bone content. Figuring that 30 pounds of the entire carcass was muscle, including the diaphragm and heart, this would total 30 times 453.5 grams, or 13,605 grams. Since 5 grams contained 70 cysts, 1 gram would contain, on an average, 14 cysts. The total for the carcass would be, therefore, 190,470 cysts. Stiles has stated that in heavy infestations as many as 20,000 bladderworms may occur in a single carcass; in this case there are apparently almost ten times as many, and the infestation is in a rather small animal. Vosgien states that 3,000 or more cysts have been found in man.

In heavy infestations, according to Stiles, the pork is watery and pale, it decomposes easily, and has a disagreeable sweet taste. In the carcass in question the meat itself was watery, but it was difficult to ascertain this fact from a gross specimen, as the cut of a knife brought away a stream of fluid from the numerous cysts opened by the cut.

Pieces of the ham were boiled and others fried to ascertain the appearance of the meat when cooked. In boiled ham the conspicuous things noticed were the cavities, where the meat had cooked firm and the cysts had fallen out or broken, and the floating shreds of cysts projecting from the meat or free in the water. In fried ham, the cysts usually opened, sometimes with a pop, and then shriveled, the cysts or their scolices showing as white knots in the meat.

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### IRIS POISONING OF CALVES.

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E. A. BRUCE, Agassiz, B. C.

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No cases of actual poisoning of stock by iris appear to have been reported. Long mentions that the wild flag was noted by Linnæus as dangerous to cattle, Lander that poisoning of animals is rare, and Pammel cites no instances of stock poisoning. Cases are on record where human beings have been poisoned by *Iris versicolor* (blue flag) which had been eaten in mistake for *Acorus calamus* (sweet flag), owing to the close resemblance of the plant before reaching the flowering stage. Many other species of *Iris* are under suspicion as irritant poisons. They contain acrid resins and an active principle iridin, a glucoside belonging to the group of vegetable purgatives.

Quite recently some interesting cases were drawn to my attention by Mr. J. Heath of Abbotsford, B. C., a keen and careful observer. While I was not fortunate enough to see these cases personally, the information supplied by Mr. Heath coupled with the fact that there was abundant evidence that iris had been eaten, leave but little doubt as to the cause of the trouble.

### HISTORY.

Nine Holstein-Jersey grade calves from 3 to 6 months of age were placed in an enclosure about half an acre in extent, and which contained a flower border. After the animals had been in this enclosure for four days, three of them were taken sick, the ages of those affected being 3, 4, and 4½ months respectively. Two of these died in less than two days, and the third died on the fourth day. Examination of the grounds showed that two clumps of iris roots were exposed and had been eaten off close to the ground; a peony had also been eaten down. The iris roots that remained were removed and no further trouble occurred.

At some future time it is hoped that the botanical name of the iris in question may be ascertained, for the present it must suffice that it was a blue flowering bulbous variety.

At first a tendency to lie down and keep quiet was noticed, together with a considerable salivation. Shortly after salivation made its appearance the glands of the head and throat became hard and enlarged, and raised sores appeared on the lips and muzzle. These sores are described as being of the nature of burns, and varied in size from that of a 25 cent piece to that of a silver dollar. They were slightly raised yellowish scabs to begin with, then became darker, and were a source of intense irritation as the animal made frequent attempts to scratch them.

Salivation was continuous. Vomiting was not noticed. Undue thirst was not marked, and the appetite was not affected for some little time after being taken ill. Acute abdominal pain was evidenced. There were no convulsions or unconsciousness. Shortly before death the fæces became very loose and contained blood. For about the last hour the animals were practically unable to move.

### AUTOPSY.

A post-mortem was held ten minutes after death on the third calf that died. The first two stomachs were said to be

more or less normal in appearance, but the others showed unmistakable signs of irritation. The kidneys, liver, and spleen were very dark in colour. The large intestines showed black patches varying in size from half an inch to six inches; the small intestines were similarly affected but to a much lesser extent.

#### REMARKS.

The post-mortem findings although meagre, in conjunction with the symptoms all point to the action of an irritant poison. Abundant evidence existing that iris plants had been eaten, together with the fact that nearly a month has elapsed since the removal of the iris plants from the enclosure without subsequent cases, all points to the cause of death as being due to poisoning by iris.

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#### GEMS OF TRUTH.

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When a plumber makes a mistake, he charges twice for it.  
When a carpenter makes a mistake, it is just what he expected.  
When a lawyer makes a mistake, it is just what he wanted, because he has a chance to try the case all over again.  
When the Doctor makes a mistake, he buries it.  
When a judge makes a mistake, it becomes the law of the land.  
When a preacher makes a mistake, nobody knows the difference.  
But when an editor makes a mistake — Goodnight !  
— *National Provisioner*.

## ABSTRACTS.

### AN INTERESTING CASE OF ADAMS' OPERATION FOR PARAPHIMOSIS AND MALFORMATION OF THE PENIS AFTER CASTRATION.

By FREDERICK HOBDAY, F. R. C. V. S.,  
London.

The patient was a valuable riding horse, five years old, which had been castrated by Mr. John Young, F.R.C.V.S., by whom I was called in consultation. The operation had apparently passed off satisfactorily, but, as a sequel, paraphymosis had set in, and the end of the penis was now turned backwards, the horse being unable to retract the organ into the prepuce. This withdrawal into the prepuce was particularly prevented by an irregularly indurated ring of tissue, about four inches thick in the front and two inches at the back, extending all around the organ itself. The front portion had already become abraded owing to friction with the abdomen, and a large sore, fully the size of a couple of crown pieces side by side, had already formed.

The horse was cast and chloroformed, \*Adams' operation being performed, and the whole of the indurated ring of tissue carefully dissected off. The edges of the mucous membranes at the top and bottom of the penis were then carefully united with interrupted sutures, and the whole was painted with iodine. As soon as the patient got up off the ground the penis was withdrawn naturally into the sheath, and recovery has since been complete.

This operation, which was first performed in America, is a most useful one, and was introduced into the British Army Veterinary Hospitals with great success. In France, especially during the bad weather of the winters and springs of 1916 and 1917, owing to the debility of the animals and the frightfully cold and muddy conditions under which the horses were compelled to exist, hundreds of cases of paralysis of the penis were met with. In some necrosis occurred as a complication, and all

\*Dr. Jno. W. Adams, University of Pennsylvania.

more or less normal in appearance, but the others showed unmistakable signs of irritation. The kidneys, liver, and spleen were very dark in colour. The large intestines showed black patches varying in size from half an inch to six inches; the small intestines were similarly affected but to a much lesser extent.

### REMARKS.

The post-mortem findings although meagre, in conjunction with the symptoms all point to the action of an irritant poison. Abundant evidence existing that iris plants had been eaten, together with the fact that nearly a month has elapsed since the removal of the iris plants from the enclosure without subsequent cases, all points to the cause of death as being due to poisoning by iris.

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### GEMS OF TRUTH.

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When a plumber makes a mistake, he charges twice for it.

When a carpenter makes a mistake, it is just what he expected.

When a lawyer makes a mistake, it is just what he wanted, because he has a chance to try the case all over again.

When the Doctor makes a mistake, he buries it.

When a judge makes a mistake, it becomes the law of the land.

When a preacher makes a mistake, nobody knows the difference.

But when an editor makes a mistake — Goodnight !

— *National Provisioner*.

## ABSTRACTS.

### AN INTERESTING CASE OF ADAMS' OPERATION FOR PARAPHIMOSIS AND MALFORMATION OF THE PENIS AFTER CASTRATION.

By FREDERICK HOBDAV, F. R. C. V. S.,  
London.

The patient was a valuable riding horse, five years old, which had been castrated by Mr. John Young, F.R.C.V.S., by whom I was called in consultation. The operation had apparently passed off satisfactorily, but, as a sequel, paraphymosis had set in, and the end of the penis was now turned backwards, the horse being unable to retract the organ into the prepuce. This withdrawal into the prepuce was particularly prevented by an irregularly indurated ring of tissue, about four inches thick in the front and two inches at the back, extending all around the organ itself. The front portion had already become abraded owing to friction with the abdomen, and a large sore, fully the size of a couple of crown pieces side by side, had already formed.

The horse was cast and chloroformed, \*Adams' operation being performed, and the whole of the indurated ring of tissue carefully dissected off. The edges of the mucous membranes at the top and bottom of the penis were then carefully united with interrupted sutures, and the whole was painted with iodine. As soon as the patient got up off the ground the penis was withdrawn naturally into the sheath, and recovery has since been complete.

This operation, which was first performed in America, is a most useful one, and was introduced into the British Army Veterinary Hospitals with great success. In France, especially during the bad weather of the winters and springs of 1916 and 1917, owing to the debility of the animals and the frightfully cold and muddy conditions under which the horses were compelled to exist, hundreds of cases of paralysis of the penis were met with. In some necrosis occurred as a complication, and all

\*Dr. Jno. W. Adams, University of Pennsylvania.

were frightfully troublesome. In a very large proportion of cases, even when the horses recovered condition, this paralysis of the penis still existed, and rendered the animal unfit for further war service. Amputation did away with the pendulous penis, but the risk of stricture was ever present, and Adams' operation came as a "godsend." It was beneficial in a very large proportion of cases, especially those in which there was a heavy roll of indurated tissue around the penis, the weight of this being often very considerable. Once this was removed, the beneficial result was most marked, and in many instances in even a few days the penis was able to be retracted into the prepuce. Its simplicity, safety and freedom from hæmorrhage, together with the large proportion of success which followed its performance, has made this operation take its place amongst the neat and practical operations of veterinary surgery, and our thanks are due to our American *confreres* for their originality and for the lead they have given us in this branch of the veterinary art.—*Veterinary Journal*.

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#### ANTHRAX IN MOROCCO.

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Chauveau's researches showed that Algerian sheep were resistant towards the anthrax bacillus of French origin. This conclusion has wrongly led to a belief among agriculturists that anthrax in the sheep did not exist in Algeria. The recent work of Léhritier, Fléry and Tribout (1912) has shown that the disease can be observed among Algerian sheep and that death is produced under conditions similar to those observed in outbreaks among French flocks, but the bacillus of Algerian origin is endowed with greater virulence than the French organism. Martin and Henry (1916) have shown that anthrax is not rare in the region of Constantine but outbreaks become manifest under atypical fulminant forms which render diagnosis very difficult.

Anthrax is common in Morocco and has been recorded by veterinarians as being widespread in many districts. It is well known by the natives, but, as in Algeria, it is often mistaken by even enlightened Europeans. It makes its appearance after the harvests at the time when land upon which cereals have been cultivated is turned into pasture. Isolated cases of the disease occur very frequently but it may become more or less

epizootic in character although this is somewhat rare; this circumstance was observed in the case of cattle imported in 1913 and 1914 from Argentina and Portugal for the needs of the army of occupation. In such instances deaths occur regularly as in a true epizootic but several days may elapse without observing a single death and then the disease re-appears. It always runs a hyper-acute course lasting only a few hours. The affected animals show only a few ill-defined symptoms. On post-mortem examination no lesions are often to be found. The spleen may be just appreciably enlarged and some petechiæ may be seen on the serous membranes. At the Casablanca abattoir Eyraud was able on several occasions to diagnose anthrax in cattle and sheep which showed only a few interstitial hæmorrhages.

The above hyper-acute form of anthrax has been observed in horses as well as in cattle. Microscopic examination systematically carried out enabled the author to discover the rôle of the anthrax bacillus in certain diseases of a fulminant character appearing in the form of an epizootic among flocks of sheep, where the disease would not have been suspected on clinical or post-mortem examination. — VELU (H.). — *Bull. Soc. Path. Exot.* 1919. Mar. 12. Vol. 12. No. 3. pp. 126-127.

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### COLLOIDS.

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The following is an extract from a Chadwick Public Lecture on "the use of colloids in health and disease," by A. B. Searle, given at the Medical Society of London on Wednesday, Feb. 26th: Sir William J. Collins, K.C.V.O., M.D., Chairman of the Chadwick Trustees, in the chair.

"Very remarkable results have been obtained during the past few years from the study of a state of matter which is intermediate between that generally recognised as "suspended" in a fluid and that in a true solution, and known as the colloidal state. Many substances of widely different composition and characteristics can be obtained in this state and their properties then differ in many ways from what would be anticipated.

The particles of colloidal matter are very minute, but by means of the ultra-microscope they may be recognized as endowed with violent motion. Many factors conducive to health

depend on the possession of a colloidal character; thus the purification of sewage depends almost wholly on its ability to form a colloidal solution with the grease and dirt. The researches of the late Henry Crookes—a son of Sir William Crookes—have proved the very effective germicidal power of elementary colloids; strikingly shown by a number of lantern slides of cultures of bacteria. This germicidal property soon led to their being employed as medicines as well as germicides—with remarkable results. Crookes' work has been followed by further investigations which have resulted in the preparation of silver, copper, mercury, manganese and palladium, and of such non-metallic elements as iodine and arsenic in the form of colloidal solutions which are isotonic with the fluids of the human body. These researches have made available a new series of liquids of great importance in the treatment of some of the most serious diseases. Amongst their most striking characteristics are their freedom from poisonous properties which render the same substances risky when administered in the form of ordinary solutions. Large doses of colloidal solutions may be given with impunity, and cures which are ordinarily prolonged, are effected rapidly.

Although the first remedial germicidal colloidal metals were first prepared in 1910, the rapidity with which they and other colloidal solutions have been adopted, and their extensive use in practice is a certain indicator of their value. Attempts to produce similar preparations were made by several German chemists, but most of the foreign preparations lack stability, and are decomposed before reaching the seat of the disease. The British colloidal solutions on the contrary are quite stable and effective.

The success which has attended investigations on the use of colloids as remedial agents is great and affords a basis of hope that further developments will be still more beneficial. It is probable that serum and vaccine thereby will ultimately be resolved into questions of colloidal chemistry, but in the meantime the use of colloidal solutions of certain elements appears to offer a means whereby they can be accurately prepared and administered with a higher degree of efficiency than is possible with some of the more complex synthetic compounds at present in use." — *Vet. Rec. (Lond.)*

## **SOME NOTES ON THE FEEDING OF FLESH TO FARROWING SOWS AND THE HABITS OF PIGS.**

By C. MORGAN, M. R. C. V. S., D. V. H.  
Puerto Cabello.

Is it unreasonable to suggest that a certain class of diet (such as one containing a large amount of half-cooked meat, which in packing-houses is termed tankage) has a tendency to develop a kind of cannibal habit in breeding sows? Several weeks ago a number of breeding sows were fed on tankage as well as on maize. Two of these, about two years old, farrowed litters of strong, healthy pigs, but within the course of twenty-four hours they killed and partially ate them all. The two animals were in excellent condition, and with abundance of milk. We then turned the two sows loose to a large pig-pen where other sows had their litters of pigs of various ages. The two sows had their udders distended with milk. Each of them did not rest until they enticed a litter each of young pigs, about a month old, away from other two sows. These two animals got so fierce that neither human beings nor any other pigs dared approach them. The result was that the udders of the other two sows got dry, and their young pigs clung to their foster-mothers and entirely ignored their own mothers. These foster-mothers caused more violent disturbance and noise than all the other pigs in the pen, which were about one hundred in number. They had previously, before being bought this time, bred two litters of pigs, but they were never fed on a meat diet until they were bought by the present owners.

I am inclined to believe that the custom of feeding these sows on the semi-cooked meat was the cause of developing this cannibal craving. In spite of all this, the maternal instinct was stronger than ever, otherwise they would not have robbed the other two sows of their pigs.

Cases are on record of mare-mules secreting milk in their udders to such an extent as to influence them to rob mares of their foals. This is also quite a common occurrence amongst sheep.

It is a well-known fact that pig-breeders have reasons to believe that feeding breeding-sows on raw meat has a tendency to develop bad habits, such as killing chickens, ducklings, and

even newly-born lambs. I know of several instances where old breeding-sows have entered cowsheds and ravenously eaten part of the cleansing of newly-calved cows. The pig is an omnivorous animal, and when hungry will devour almost anything that comes across its path, whether clean, unclean, alive or dead. The older the animal the more of these bad habits it develops. The pigs in Great Britain have far more attention paid to their welfare than used to be the case. It was often a custom in some districts to turn the breeding-sow out of doors a few weeks after farrowing to search for part of her scanty diet, and then it was even dangerous to turn young children out of doors in case they might fall the victims of this voracious cannibal. Most people now have come to realise that the pig, like other domesticated animals, should be properly fed, and kept clean, as the better the hygienic environment the better will the pig thrive and pay. A pig, as we all know, is almost destitute of reason. A circus animal-trainer told me once that he possessed patience to such an extent as to even train fleas to perform certain feats, but that his patience was not sufficient to make a successful stage performer of the pig. Yet the pig is gifted with a certain amount of what we might term selfish animal cunning. Anyone who has seen one of these intruders in a ripe corn-field, with eyes and ears upon the alert, will know that this animal possesses enough cunning to realise that he is a trespasser. Nevertheless, in spite of all his vigilance, it is not of much advantage to himself individually, as he always utters a loud grunt at the approach of a human being, and off he scampers through the rustling corn.

"Yes, I would certainly keep a pig," says "Alpha of the Plough." The idea came to him while he was digging his allotment, and the same day he met the farmer's wife and encouraged her to talk on the thrilling theme. He went indoors, and the first thing that caught his eye was an article on "The Cottager's Pig." He imbibed it with the frenzy of a new religion, and rose filled to the brim with lore about the animal to whose existence (except in the shape of bacon) he had been indifferent so long. Yes, it was a patriotic duty to keep a pig. He was an ally in the war. He saw the whole German staff turning pale at his name, as Mazarin was said to turn pale at the name of Cromwell. By night he could have held his own

without shame or discredit in any company of pig-dealers, and in his dreams he could see the great globe itself resting on the back of a pig.

[Irritability and excitement at the time of parturition may bring on transitory dementia in some sows and cause them to kill and eat their litters. Other reasons for the act have been ascribed to lack of flesh diet and consequent liking for it, hereditary vice, deficiency of lime salts in the food, etc. Some sows kill their youngsters and do not attempt to eat them. — SUB-EDITOR.] — *Vet. Journ.*, (*Lond.*).

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### BOVINE ADAMANTINOMA.

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H. Horne published a clinical and histological description of this case in the *Deutsche Tierärztliche Wochenschrift*. In a six-year-old cow of Danish breed, a tumor had developed rapidly in connection with the lower jaw near the incisor teeth; and had deformed the whole region and displaced the teeth towards the left side. The cow was in good condition, and showed no general signs of disturbance; but, as the tumour was growing rapidly, the owner sent her for slaughter. As nothing was known at the abattoir concerning the development of the tumour, actinomycosis was suspected; and the tumour was sent to Horne for examination.

Examination showed that the anterior portion of the lower jaw was transformed into a round body which the lower lip could not completely cover, so that part of it was visible through the semi-opened mouth. The tumour was asymmetrical, being more voluminous to the left than to the right. Its measurements were 10 x 12 x 17 centimetres; and it weighed, together with the lower lip adhering to it, 1250 grammes.

To the touch, the tumour presented almost woodlike hardness in its superficial parts, but was a little more soft in its depth. A longitudinal section showed that the whole tumour was infested by a bony layer which was especially hard and thick where it joined the incisor teeth, while it diminished in the posterior portion of the tumour. Beneath this layer the tumoural mass was composed of round and oval islands. Its tissue was consistent, almost transparent; and was divided by means of

bands of connective tissue into small cavities or spaces in which a gelatinous or muco-œdematous mass was disposed.

Microscopically, the tissue of the tumour presented a characteristic structure. The connective tissue and the epithelium were disposed very nearly as in carcinomatous tissue. The epithelial masses formed ramified or anastomosed cords, or else more or less rounded or oval agglomerations. Each agglomeration was infested, especially at the surface, by a layer of cylindrical epithelial cells. In the smaller alveoli the epithelial cells which invested the internal face of this layer were very compressed; in the larger aveoli, however, these same cylindrical epithelial cells were transformed in the deep and central parts into ramified stellate cells. Here and there in the alveoli a decomposition of the cells with the formation of small cysts would be noted. In the midst of these epithelial elements was found a fibrillar stroma more or less rich in cells. Taken as a whole, the microscopic appearance of this adamantinoma (or adamantoma) was very typical, and was clearly and easily differentiated from that of other species of tumour.

Cases of adamantinoma are not frequent in the domestic animals. Liénaux has seen two cases in the cat. Fölger described three cases in cattle, and Joset reported three more, also in cattle. In man, however, similar cases are not so infrequent, and are considered as a species of benign tumour of slow development, situated in the jaw.

As regards the genesis of adamantinoma, it is admitted that it takes origin from the remnants of the embryonic *primary enamel organ* or *enamel germ*; for the epithelial formations described above strangely resemble certain portions of the dental tissue, and intermediate stages between these tumours and odontomata are also met with. — *La Clinica Veterinaria*.

W. R. C. — *Vet. Record. (Lond.)*

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Lieut. John R. Shands, who has spent eleven years in the Orient, principally in the Philippine Islands, Australia and China, has returned to the United States and ordered to Camp Dix, New Jersey, as Camp Veterinarian. Lieut. Shands was in Chicago on his way from Tientsin, China, to Camp Dix, and had an opportunity of familiarizing himself with some of the latest inventions of civilization.

## ARMY VETERINARY SERVICE

### MAJOR WILLARD F. GUARD.

In order to keep the record straight, we are pleased to correct an error concerning Major Willard F. Guard, at his request, which appeared in the August number of the Journal, although the item was published just as it came to us.

Major Guard's name should have been Willard instead of William; he sailed for France May 14th instead of April 14th; and he was promoted to the grade of Major on May 3rd instead of June 3rd, 1919.

### FROM THE OFFICE OF THE SURGEON-GENERAL OF THE ARMY, WASHINGTON, D. C.

#### OFFICERS, VETERINARY CORPS, UNITED STATES ARMY.

	On duty	
	Aug. 11, 1919	Sept. 11, 1919
Colonels . . . . .	0	0
Lieutenant Colonels . . . . .	5	5
Majors . . . . .	54	47
Captains . . . . .	119	90
1st Lieutenants . . . . .	255	187
2nd Lieutenants . . . . .	178	109
Totals . . . . .	611	438

#### VETERINARY OFFICER DETAILED TO GENERAL STAFF COLLEGE.

Lieutenant Colonel John H. Gould, Veterinary Corps, has been ordered to report to the Commandant, General Staff College, for assignment to duty to take the course at the college. The co-operation and functioning of the Veterinary Corps with all other staff departments in the movement of troops is most essential, and it is important that veterinary officers be trained with other staff officers for this duty. The care of sick animals with combatant troops, the evacuation of animal casualties and

hospital arrangements for their treatment are very essential features for the successful operation of armies, as experience has demonstrated in France. Lieutenant Colonel Gould only recently returned from France. He was division veterinarian, 88th Division, until December 15, 1918, when he was made chief veterinarian, Second Army, and, upon its disbandment, was transferred to the Third Army (Army of Occupation) as chief veterinarian and served in this capacity until his return to the United States.

#### APPOINTMENT OF EMERGENCY OFFICERS.

"The Chief of Staff has approved recommendations of the Director of Operations, General Staff, providing that in filling such vacancies for commissioned officers as may be provided by legislation reorganizing the permanent military establishment, it is the policy of the War Department to select appointees from among persons who served as emergency officers between April 6, 1917, and Nov. 11, 1918. Upon enactment of legislation, emergency officers still in service having approved applications on file will be examined for appointment without further action on their part. Upon enactment of legislation, former emergency officers who have been honorably discharged and in whose cases there are approved applications on file will, if eligible, be communicated with to ascertain if they still desire appointment and will be examined if they so desire. Former emergency officers who have been honorably discharged, but who at time of discharge or prior thereto did not express desire for permanent appointment may make application for examination. Persons other than emergency officers may be eligible under such legislation as is enacted, may make application for examination and will be examined if recommendations and records are satisfactory.

"No applications, other than from emergency officers still in service will be considered or filed at this time. Regardless of such preliminary or other examinations as may have been held, no appointment will be made without a thorough and satisfactory final examination. The final examination will be such as to establish the mental, moral and physical qualifications of appointee. Candidates will be examined for arm of service selected by them, within limits of legislation. Examinations will not be held for a particular grade. Examining boards will

be permitted to recommend a suitable grade or grades for appointment, but all candidates will be examined with the understanding that the grade in which appointment is tendered will be determined by the War Department from consideration of age, length and character of service and recommendations of boards."

#### COMMENT.

The above quoted article was published in the Army and Navy Journal, August 16, 1919. It is the first authoritative information that has been given out by the General Staff regarding the proposed plan for the appointment of emergency officers to the Regular Army.

It will be noted in the first paragraph that everything depends upon enactment of legislation by Congress. Until Army reorganization plans are definitely decided upon by the Military Committees and passed by Congress, the number of vacancies and grades that will be open in the Veterinary Corps can not be stated.

#### MAJOR OLAF SCHWARZKOPF, V. C., REGULAR ARMY.

Major Olaf Schwarzkopf, V. C., Regular Army, was retired from active service August 19, 1919. During Major Schwarzkopf's military and professional service he has ranked as one of the foremost veterinarians in America and upon his retirement at this time it seems appropriate to present a brief resume of his active career.

His elementary education consisted of nine years' course at the German Gymnasiums at Bromberg and Thorn where Latin, Greek, French, Higher Mathematics, General History, etc., were obligatory.

Graduating from the Gymnasium at Thorn, he entered the Royal Veterinary College, Berlin, Germany, in 1875, and received his degree from this college in 1880 after a five years' course in veterinary medicine. From graduation until 1885 he was in active practice in Germany.

In 1885 he came to the United States to act as assistant to Professor F. S. Billings, V. S., New York City. He entered the United States Army in February, 1886, as Veterinarian, 8th U. S. Cavalry, stationed at that time in Texas and served for four months at the end of the Geronimo campaign. In 1888 the 8th Cavalry made the longest march on record in the United

States Army to date when it marched overland from Fort Davis, Texas, to Fort Meade, South Dakota, a distance of two thousand miles. Dr. Schwarzkopf was a member of the command. He resigned as veterinarian, 8th Cavalry, January 1, 1889, to accept the chair of professor of Veterinary Medicine at the Agricultural College, State University of Minnesota. He remained here until 1894 when he was appointed Dean, McKillip Veterinary College, Chicago, Illinois, at which place he stayed until 1896. In 1897 he was appointed Professor at the American Veterinary College, New York City, and remained at this institution until 1900. He was reappointed to the Army as Veterinarian, First Class, in July, 1900, and assigned to the 3rd Cavalry, for duty. He served with the 3rd Cavalry in the Philippines from 1900 to 1902, taking part in the campaign in Northern Luzon. In 1901 when the Army was reorganized, Dr. Schwarzkopf was appointed Veterinarian of Cavalry and continued to serve with the 3rd Cavalry until 1913. During his service with the 3rd Cavalry they had a second tour of duty in the Philippines from 1905 to 1907. In 1913 Dr. Schwarzkopf was detailed as Veterinary Instructor, Department of Hippology, Mounted Service School, Fort Riley, Kansas, and when the Army Schools were discontinued due to the Mexican Border trouble in 1914, Dr. Schwarzkopf again returned to the 3rd Cavalry for service in Texas until 1916. From April to August, 1916, he was recorder for the Board of Veterinary Examiners to examine all veterinarians for commissions in the Veterinary Corps organized under the Act of June 3, 1916.

He was commissioned Captain in the Veterinary Corps, United States Army, June 3, 1916, and promoted to the rank of Major, Veterinary Corps, United States Army, on September 14, 1917. In May, 1917, Captain Schwarzkopf was ordered to the Medical Supply Depot, St. Louis, Mo., as Officer in Charge of Veterinary Supplies and organized the Veterinary Division of this depot. He was stationed here until May, 1918. He was transferred to Fort Snelling, Minn., in June, 1918, as Post Veterinarian, and was at this station until September, 1918, when he was transferred to Fort D. A. Russell, Wyoming, for duty as Post Veterinarian, and was on active service there until his retirement on August 19, 1919.

Major Schwarzkopf has been a generous contributor to the veterinary journals and live stock periodicals on all matters

pertaining to the profession and livestock interests. He has always been active in advocating proper recognition for the Army Veterinary Service. In 1887 while at Fort Clark, Texas, he wrote an article entitled "The Necessity of an Organized Veterinary Corps, United States Army" and its recommendations are briefed as follows:

1. The Veterinary Corps to be attached for administrative purposes to the Medical Department of the Army.

2. That there shall be three classes of officers:

- (a) First Lieutenant mounted.
- (b) Captain, mounted, after ten years' service upon passing professional examination for promotion.
- (c) Major, mounted. Chief of the Veterinary Corps to be attached to the Office of the Surgeon General of the Army.

3. The number of veterinarians to be 40, including all grades.

It must be a source of great satisfaction for Major Schwarzkopf to see the Veterinary Corps being organized as part of the Medical Department along the lines proposed by him in his first article.

Some of the articles written by Major Schwarzkopf are given below:

1. The Effect of Loco-weed—A. V. R., July, 1888.
2. National and International Meat Inspection—Proceedings, U. S. V. M. A., October, 1890.
3. American Veterinarians be Watchful. (Horse-breeding) A. V. R., July, 1897.
4. The Revival of Horse-breeding—A. V. R., August, 1897.
5. The Future of the American Veterinary Profession—A. V. R., August, 1897.
6. Docking of Horses for Fashion's Sake—A. V. R., October, 1897.
7. Veterinary Education in New York State—A. V. R., March, 1898.
8. The True Story of the Army Veterinarian—A. V. R., August, 1898.
9. The Treatment of the U. S. Army Horse in the Cuban War—A. V. R., December, 1898.
10. The Army Beef Inquiry—A. V. R., April, 1899.

11. The Schmidt Treatment of Parturient Paresis—A. V. R., June, 1899.

12. Military Veterinary Hygiene Journal, U. S. Cavalry Association, July, 1904.

13. The Structure and Function of the Horse's back and its Relation to the Form and Use of the Military Saddle—Journal U. S. C. A., September, 1910.

14. The Hygiene and Treatment of the Horses at the Manœuvre Division, Texas—Journal U. S. C. A., March, 1912.

15. The Changed Status of the Horse in War—Journal U. S. C. A., December, 1915.

TRANSLATIONS FROM THE GERMAN FOR THE MILITARY INFORMATION DIVISION OF THE GENERAL STAFF.

1. Measurements of Breeding Horses and Army Horses. By Professor S. Nathusius.

2. Packing of the Field Saddle. March, 1907.

It is with keen regret that the Veterinary Corps sees the passing from active duty of a man who has always given his untiring energy towards the advancement of the veterinary profession in the United States and the veterinary service extends to Major and Mrs. Schwarzkopf their very best wishes for a long and happy life.

The following officers have resigned from the Veterinary Corps during the past month:

Major J. J. Connolly, 2nd Lt., V. C., R. A.

1st Lieut. R. M. Sarde, 2nd Lt., V. C., R. A.

1st Lieut. B. S. Fritz, 2nd Lt., V. C., R. A.

1st Lieut. G. P. Bard, 2nd Lt., V. C., R. A.

1st Lieut. C. Van. W. Morris, 2nd Lt., V. C., R. A.

It may be of interest to our readers to know that the Veterinary Corps in France in spite of its shortcomings which have been heralded throughout the country did do excellent work with the American Expeditionary Forces and this was appreciated by Commanding Generals as the following copy of a commendation will show. It may be also stated that Major General Robert L. Howze is one of the most prominent cavalymen of the Army and is now in command of the Mexican Border patrol with station at El Paso, Texas.

## HEADQUARTERS THIRD DIVISION

A. P. O. 740 A. F. I. G.

August 6, 1919.

From: Robert L. Howze, Major General, Division Commander.

To: Jesse D. Derrick, Major, V. C., Division Veterinarian.

Subject: Commendation.

1. The 3rd Division easily won the IV Corps Animal Transport show, and now are reported by the Remount Service as being in a finer condition than any other animals received by them. This indicates that the animals of this Division were brought to the standard of excellent. It is therefore fitting that those responsible be commended.

2. The scarcity of replacements during active operations resulted in this Division arriving in Germany with many mangy and debilitated animals. Due to the efficient services of the Veterinary Officers and enlisted personnel, mange was eradicated and such animals as were not evacuated, promptly returned to the service.

3. Those Officers deserving particular mention are Captain William C. Keck, V. C., 1st Lieut. Lloyd J. Brown, V. C., 1st Lieut. R. M. Sarde, V. C. and 1st Lieut. Thomas A. Breen, V. C. These Officers during active operations in addition to their Veterinary duties, constantly inspected and supervised the horse lines, encouraging and assisting the men in caring for the animals. Since in the occupied area Captain Augustus Duncan, Inf., Animal Inspector, 6th Infantry Brigade, has rendered service of the highest character.

4. Those enlisted men deserving particular mention are Sgt. 1st class Matt A. Ellis, Sgt. James H. Rudd, Corporal William Sherman Page, Corporal Ernest L. Tompkins, Farrier Melton T. Hogan, Farrier Burl Hinds, Farrier Harry J. Stebens, Farrier William Peter Weber, Horseshoer William W. Woods, Pfc. Dalton D. Long, Pfc. Ira R. Lambert. Sgt. 1st class Ellis with the office of the Division Veterinarian carefully carried out instructions, displaying accuracy in making reports and cheerfully did anything he could to coordinate the work of the Veterinary Corps. The above enlisted men rendered intelligent and efficient assistance to their officers and of their own accord performed many secondary duties, resulting in the saving of many animals and in the improving of the conditions of others.

5. The 3rd Mobile Veterinary Section in addition to evacuating sick and wounded animals has also rendered valuable service in bringing up replacements. On one occasion, assisted by casu-als, they brought 900 animals from Tronville, France, to Mars-la-Tour, Lorraine. This was after the Division had left the former area. They have also been conspicuous in Division, Corps and Army Horse Shows.

(Signed) ROBERT L. HOWZE,  
Major General, U. S. A.,  
Division Commander.

Captain Duncan, an Infantry Officer, was assigned to this Division as remount officer, and by orders of General Howze was directed to report to the Division Veterinarian for duty.

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### INDIANA VETERINARIANS SHOW MUCH INTEREST IN STERILITY IN BREEDING CATTLE.

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Dr. L. C. Kigin, Extension Veterinarian, writes that sterility among breeding cattle is a subject of unusual interest to veterinarians and cattle breeders in Indiana. The Extension Department of Purdue University has just made it possible for Indiana veterinarians to hear Dr. E. T. Hallman of the Veterinary Division, Michigan Agricultural College, discuss this important subject. The large number of veterinarians who came out to hear Dr. Hallman indicates the interest every veterinarian has in this trouble. Through the coming of Dr. Hallman to Indiana there has been awakened a new interest in veterinary science.

We all feel a debt of gratitude to the Doctor for the effective and splendid manner in which he presented his subject.

Examinations and demonstrations of treatment were carried out at many clinics arranged for the meetings. The series lasted from September 8th to 12th.

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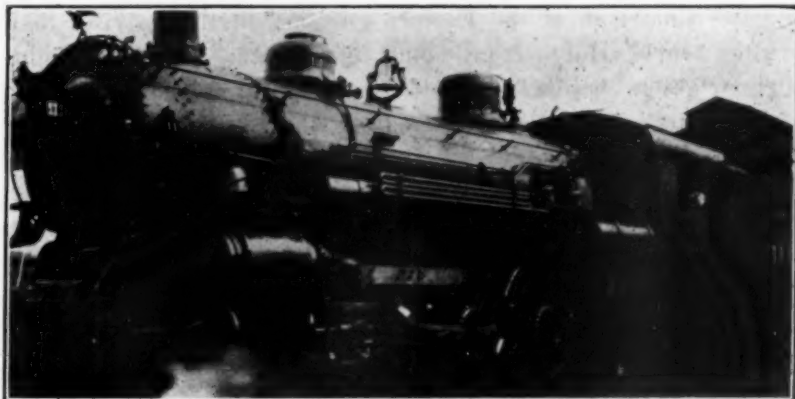
Dr. S. Brenton, of Detroit, Mich., was a recent visitor to Buffalo, N. Y.

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Dr. C. J. Marshall, of Philadelphia, late of the Army Veterinary Service, after returning to his post of State Veterinarian in Pennsylvania, has resigned his official place.

## **ASSOCIATION NEWS.**

### **AMERICAN VETERINARY MEDICAL ASSOCIATION.**



ALL ABOARD FOR NEW ORLEANS.

### **REDUCED RATES FOR THE NEW ORLEANS MEETING.**

In the June and July numbers of *THE JOURNAL*, the writer briefly referred to the possibility of reduced rates for the A. V. M. A. in New Orleans, La., November 17-21st, inclusive, and particularly in the July number, page 466, a promise was made that the limit of effort would be put forth to secure rates less than 3 cents per mile for the occasion. After having had considerable correspondence with the traffic managers of the South-eastern, Western and Eastern Divisions of the United States Railroad Administration, the writer is in possession of sufficient authentic information to warrant publication to the effect that winter excursion tickets at reduced fares will be on sale, daily, beginning October 1st and continuing throughout the winter season, with final limit good reaching original starting point, returning May 31st next, and with liberal stopover privileges on the going and returning trips. These rates will be authorized to New Orleans from practically all important points in the United States.

A letter from the Eastern Division states that the proposed fares from some of the principal points to New Orleans and return are as follows:

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Boston, via Albany . . . . .	\$83.94
Boston, via New York . . . . .	85.50
New York City . . . . .	73.14
Buffalo . . . . .	70.42
Detroit . . . . .	61.33

The Chairman of the Eastern Division further advises that winter tourists fares from points in Indiana, Michigan, Ohio, Pennsylvania, etc., will be published on the basis of 90% of double the one way fares, but that this information is only tentative. However, the evidence at hand indicates the certainty of reduced rates.

The correspondence on file from the other Division managers does not indicate the exact reduction, but states that it will be on a low and favorable basis. It will be noted that the time limit and stopover concessions are very liberal, which should appeal to a large number of members who anticipate a visit enroute, or an extended southern vacation.

In order to avoid confusion and misunderstandings, it might be well to negotiate with the Railroad agents, immediately, for the journey and it is particularly important that Pullman reservations be purchased likewise, as traffic southward during November is likely to be rather congested.

A fare less than 3 cents a mile should be hailed as good news, and it is sincerely hoped every member will take advantage of the opportunity to attend this meeting which, from every indication, will go on record as the most important ever held.

#### ROUTES AVAILABLE.

To proceed to New Orleans, La., from the following points the railroads indicated are the ones available for the journey:  
Albany, N. Y.—New York Central R. R. to New York, N. Y., thence direct over the Pennsylvania and Southern lines.

Boston, Mass.—New York, New Haven and Hartford R. R. to New York, N. Y., thence direct over the Pennsylvania and Southern lines; or Boston and Albany to Albany, N. Y., via New York Central lines to New York, N. Y., thence direct over the Pennsylvania and Southern lines.

Buffalo, N. Y.—Erie R. R. to Cincinnati, Ohio, thence direct over the Cincinnati, New Orleans and Texas Pacific R. R., (Q. & C. Route); or Lake Shore R. R., and Big Four R. R., to Cincinnati, Ohio, thence direct over the Cincinnati, New

Orleans & Texas Pacific R. R., (Q. & C. Route); or Louisville & Nashville R. R., or start over the Lake Shore R. R., to Chicago, Ill., thence direct over the Illinois Central R. R. Cincinnati, Ohio—Direct, either over the Cincinnati, New Orleans & Texas Pacific R. R. (Q. & C. Route), or Louisville & Nashville R. R.

Chicago, Ill.—Direct over the Illinois Central R. R.

Cleveland, Ohio—Big Four R. R. to Cincinnati, Ohio, thence over Cincinnati, New Orleans & Texas Pacific R. R. (Q. & C. Route), or Louisville & Nashville R. R., or start over the Lake Shore R. R. to Chicago, Ill., thence direct over the Illinois Central R. R.

Denver, Colo.—Union Pacific R. R. to Kansas City, Mo., change to either Chicago and Alton R. R., Missouri Pacific R. R., or Wabash R. R., for St. Louis, Mo., thence direct over the Illinois Central lines; or from Kansas City, Mo., over the Kansas City Southern R. R. to Shreveport, La., thence direct over the Texas & Pacific R. R., or direct over the Louisiana Railway & Navigation Co., or continue through Shreveport, La., over the Kansas City Southern to Lake Charles, La., thence direct over the Southern Pacific R. R.; or from Kansas City, Mo., to Memphis, Tenn., over the Frisco lines and thence direct over the Illinois Central R. R.

Des Moines, Iowa—Wabash lines, or Chicago, Burlington & Quincy R. R. to St. Louis, Mo., thence direct over the Illinois Central R. R.

Detroit, Mich.—Cleveland, Cincinnati, Chicago and St. Louis R. R., (Big Four Route) to Cincinnati, Ohio, thence direct over the Cincinnati, New Orleans & Texas Pacific (Q. & C. Route), or Louisville & Nashville R. R., or over the Michigan Central R. R. to Chicago, Ill., thence direct over the Illinois Central R. R.

Kansas City, Mo. and Kan.—Over the Kansas City Southern R. R. (See final route from Denver, Colorado).

Louisville, Ky.—Either Louisville & Nashville R. R., or Illinois Central R. R., direct.

Minneapolis, Minn.—Chicago, Milwaukee & St. Paul R. R. to Chicago, Ill., thence direct over the Illinois Central R. R.

New York, N. Y.—Over the Pennsylvania and Southern lines direct.

Omaha, Nebr.—Chicago, Burlington and Quincy R. R. to Kansas City. (See final route from Denver, Colorado).

Philadelphia, Pa.—Pennsylvania and Southern lines direct.

Pittsburg, Pa.—Baltimore and Ohio R. R. to Cincinnati, Ohio, thence over the Cincinnati, New Orleans & Texas Pacific R. R. (Q. & C. Route), or Louisville & Nashville R. R. direct.

Portland, Ore.—Over the Southern Pacific R. R., via San Francisco, Cal., direct all the way.

Salt Lake City, Utah—Union Pacific R. R. to Denver, Colo., (See Denver, Colo., for completion).

San Francisco, Calif.—Southern Pacific R. R., or Frisco lines direct all the way.

Seattle, Wash.—Great Northern R. R. or Northern Pacific R. R. to Portland, Ore., thence Southern Pacific lines via San Francisco, Cal., direct all the way.

St. Louis, Mo.—Illinois Central lines direct all the way.

St. Paul, Minn.—(See Minneapolis, Minn. Route).

Washington, D. C.—Southern lines direct all the way.

Passengers leaving Chicago will have the benefit of the Panama Limited over the Illinois Central Railroad, which is the train *de luxe* for New Orleans. It leaves Chicago daily, 12:30 p. m.

E. I. SMITH, Sec.-Treas.

Chairman, Committee of Arrangements,  
L. V. M. A.

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Dr. Donald Palmer, formerly with the 151st Field Artillery, and later with the 89th Division in Germany, has returned to the United States and has engaged in practice with Dr. W. E. Day, at Minneapolis, Minnesota. Dr. Palmer was for a number of years in the B. A. I. service.

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Dr. E. L. Reed, formerly in charge of Hog Cholera Serum Manufacture with the H. K. Mulford Company, is now in charge of Hog Cholera Control Work for the State of Florida with headquarters at Chipley, Florida.

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Dr. Geo. H. Berns, of Brooklyn, has fully recovered from a recent attack of pneumonia and is again enjoying his old-time vigor.



FAMOUS OLD FRENCH OPERA HOUSE, NEW ORLEANS.

### **"OPERA FRANCAIS DE LA NOUVELLE ORLEANS."\***

Members of the A. V. M. A.! here is a splendid opportunity to witness a real genuine French Opera, fresh from the European centers of fine arts. This fall, commencing November 11th and ending February 18th, the old French Opera House in New Orleans will open its doors to the public, and according to the critics, it will be the most brilliant season of the organization.

In the Times-Picayune, under date of August 30, 1919, appears the following:

#### **GREAT OPERATIC STARS SIGNED FOR NEW ORLEANS.**

Brilliant Season is Predicted by Louis Verande,  
Now in France.

"Devotees of Grand Opera in New Orleans are assured a rare treat this winter with the revival of the French Opera under the auspices of the New Orleans Grand Opera Association \* \* \* \* the sale of boxes to date has already passed the \$50,000 mark."

\*In the preparation of this information, the writer received valuable data from Mr. Harry B. Loeb, New Orleans, La., music critic for the New Orleans Item.

To further show how much appreciation is being afforded, there was exhibited to the writer a cablegram from a Mrs. M. Chaffraix of New Orleans and Paris, in which she cabled \$1500 for a proscenium box, for the season, at the old French Opera House.

Louis Verande, formerly of Convent Garden, Opera Comique, Metropolitan and the Chicago Grand Opera, is the impresario. Mr. Verande is now in Europe where he has engaged the cast for the coming season. Owing to the death of Oscar Hammerstein, Mr. Verande was able to contract for stars who were under option to the New York producer. According to Associated Press reports, Hammerstein had planned to present a season of French Opera in New York in opposition to the Metropolitan and had combed Europe for stars. Practically every one under option to Hammerstein has been signed for New Orleans.

In order to furnish a vivid and artistic description of the old Opera House, I subjoin an extract from the Daily Picayune supplement of December 3, 1859:

\* \* \* "The coup d'oeil presented by the auditorium, when viewed from the center of the parquet, was superb indeed. The house is constructed so as to afford full view of the audience from almost every point, and its gracefully curved tiers of boxes, rising one above the other, each gradually receding from the line of the other, and then filled, in a great degree, with ladies in grande toilette, presented a spectacle that was richly worth viewing \* \* \* the whole house is painted white and the decorations of the fronts of the boxes are in gold \* \* \* a magnificent mirror on each side of the proscenium adds greatly to the picturesque effect of the auditorium. The entrances to the house are numerous, spacious and commodious, and the crush, ladies' retiring rooms, etc., are constructed upon a scale of great elegance."

Notwithstanding the beauty and costly design of the interior, the historic old building will be renovated from orchestra pit to gallery. New scenery is being painted and new costumes will be introduced, all of which will add that much more to the splendor of the season. The exterior is not particularly prepossessing, except with regard to its size. However, it is equipped in every respect as an opera house should be, with a parquette, loges, secondes, troisiemes, quatriemes, loges grilles,<sup>1</sup> baignories grilles,<sup>2</sup> dress circle, boxes and foyer, all

1. Logis grilles, a screened box in a theatre.

2. Baignories grilles, a large screened box on the ground floor of a theatre.

decorated to a high degree and of the most magnificent character. Here grand opera is given as elaborately as in Paris and the companies are capable of performing opera bouffe as well as grand opera.

The program calls for the production of such favorites as *La Tosca*, *Aida*, *Les Huguenots*, *Faust*, *Il Trovatore*, *Les Bohème*, *Melisande*, *Carmen*, *La Juive* and *Lucia Pagliacci*.

Stars engaged include Edith De Lys, who will create the role of *Melisande* in *Melisande* and *Pelias*; Mlle. Gripon, who will be the *Fiora* of *L'Armour des Trois Rois*, also *Lea* of *Enfant Prodigue*; she is a dramatic soprano and was under engagement to *Hammerstein*; Mlle. Delorme, lyric soprano; *Dorothy Francis*, Mezzo; *Errole*, the famous tenor; *Milhan*, another tenor; *Henry Weldon*, basso; *Perisse*, forte tenor; Mlle. *Fanney Regia*, and a generous chorus of beautiful dancers.

It is interesting to note that when New Orleans only had a population of about 5,000 which was in the latter years of the eighteenth century, the people became ambitious and built a crude, one story wooden structure, and named it "*Le Spactacle de la Rue St. Pierre*." The regime was brief on account of the dilapidated condition of the building. A few years later a new theatre was erected, but was doomed to an early failure, for it soon fell under the auctioneer's hammer. In 1810, New Orleans had three theatres, and the seating capacity of the largest one, the theatre *St. Philippe*, was only about 700. In 1859, the present French Opera House was completed and the first performance was "*William Tell*." The place suddenly became popular and in 1860-61, *Adelina Patti*, then the 18 year old prima-donna, charmed her audiences in "*Il Trovatore*" and "*Les Huguenots*," both of which will be produced this season. From 1859 to the present time, the doors of the French Opera in New Orleans, have been open with the exception of interruptions during the Civil War and the late European conflict. It was New Orleans that first introduced French and Italian Opera into America and the Crescent City gave many performers such applause that they later became famous, both at home and abroad.

Both grand opera and opera bouffe existed in New Orleans long before it was established anywhere else in America, and the opera is one of the features which distinguishes the city.

It would render it remarkable among American cities even if it had no other unique feature.

Only five blocks from the heart of Canal Street, on the corner of Toulouse and Bourbon Streets, stands the old historic French Opera House. It is designed and constructed along simple and plain lines of the old Italian Renaissance style of architecture and has a seating capacity of 2800 people. The building is one of the best appointed opera houses in the world, and within its magnificent interior, bathed in an atmosphere of celestial environment, many a real connoisseur has received an inspiration and acquired, quite above the average, an operatic education at a very reasonable expenditure.

A number of the customs of the old Theatre d'Orleans were modified and transmitted to the present old edifice; notably, in the antebellum days full evening dress was required of the audience, but now only evening dress is tolerated in the boxes. The opening of the opera is the opening of the social season, particularly in New Orleans, and it is sincerely hoped the wives and daughters of the members of the A. V. M. A. will make this occasion the climax of their social season and come to the Convention City in full force.

E. I. SMITH.

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### **PARTIAL LIST OF PAPERS AND AUTHORS FOR THE PROGRAM OF THE NEW ORLEANS MEETING.**

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Up to the time of going to press, THE JOURNAL has not received the completed program of the New Orleans meeting. However, the following is a list of a number of papers and authors in different Sections.

#### **SECTION ON SANITARY SCIENCE AND POLICE.**

##### *Symposium on Infectious Equine Anemia (Swamp Fever).*

Experimental Transmission of Swamp Fever, or Infectious Anemia, by Means of Insects—Prof. John W. Scott, Laramie, Wyoming.

Swamp Fever—Dr. Seymour Hadwen, Ottawa, Canada.

A Comparative Study of the Long Bones in Infectious Equine Anemia and Other Conditions—Dr. Lewis H. Wright, Reno, Nevada.

*Discussion:*

Opened by Dr. C. P. Fitch, St. Paul, Minn., who will touch upon the geographical distribution, as well as certain pathological aspects of the disease.

Swamp Fever in the North—Dr. A. F. Schalk, Agricultural College, N. D.

Swamp Fever in the South—Dr. E. M. Ranck, Agricultural College, Miss.

*Session Devoted to Diseases of the South.*

Parasitic Diseases in Their Relation to the Live Stock Industry of the Southern United States—Drs. B. H. Ransom and M. C. Hall, Washington, D. C.

Poisonous Plants of the South—Dr. E. D. King, Mobile, Ala.

Deficiency Diseases of the South—Dr. C. A. Cary, Auburn, Ala.

Tick Eradication in the South—Dr. E. I. Smith, Baton Rouge, La.

Strongylidosis in Horses and Mules—Dr. P. J. Orchard, Baton Rouge, La.

*Symposium on Diseases of Cattle.*

White Scours or Calf Scours—Drs. W. L. Williams, W. A. Hagan, and C. M. Carpenter, Ithaca, N. Y.

Malignant Catarrhal Fever—Dr. T. E. Munce, Harrisburg, Penn.

Additional Observations on Tuberculin Testing and Retesting—Dr. H. W. Turner, New Hope, Penn.

Some Carriers of Anthrax Infection—Dr. Harry Morris, Baton Rouge, La.

*Session Devoted to Topics of Interest to B. A. I. Veterinarians.*

Retrospection and Fraternity from the Standpoint of a Former Employee of the Bureau of Animal Industry—Dr. V. A. Moore, Ithaca, N. Y.

Paper—Dr. John R. Mohler, Washington, D. C.

Tuberculosis Eradication—Dr. Jno. A. Kiernan, Washington, D. C.

Meat Inspection and Its Value as a Safeguard to the Public Health—Dr. R. W. Tuck, New Orleans, La.

The Sanitary Production and Handling of Milk—Dr. F. J. Cambon, New Orleans, La.

Transmission of Diseases by Insects—Mr. F. C. Bishopp, Dallas, Texas.

Paper (Title to be announced)—Drs. Seymour Hadwen, Ottawa, Canada and B. H. Ransom, Washington, D. C.

#### SECTION ON PRACTICE.

Intussusception of Intestines—Dr. J. N. Frost, Ithaca, N. Y.  
Caesarian Section in the Sow—Dr. J. N. Gould, Worthington, Minn.

Surgical Phases of Army Veterinary Work in France—Major George B. McKillip, Chicago, Ill.

Bang Disease, or Abortion Disease; Its Handling by the Practitioner—Dr. J. F. Devine, Goshen, N. Y.

Impaction in the Horse—Dr. H. A. Trippeer, Walla Walla, Wash.

Sheep Practice—Dr. E. T. Baker, Moscow, Idaho.

Heredity as Expressed by Our Stallion Registration Laws—Dr. W. H. Welch, Lexington, Ill.

Economic Production of Hogs in the South—Prof. Dan T. Gray, Raleigh, N. C.

The Purpose and Scope of Extension Veterinary Work—Dr. L. C. Kigin, Lafayette, Ind.

*One of the General Sessions will be given over to the Army Veterinary Service, and the subjects presented will include*

The Army Veterinary Service in the United States—Col. C. J. Marshall.

The Veterinary Service in the A. E. F.—Col. H. E. Bemis.

The British Army Veterinary Service—A Ranking Veterinarian of the Canadian Veterinary Service.

In addition to the above, there will be the business of the General Sessions, etc., all of which will appear on the completed program.

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#### RECORDS OF SERVICE, ETC. WANTED BY SECRETARY MAYO.

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It is probable that most members of the American Veterinary Medical Association do not know that the records of the individual members are kept upon a loose-leaf system. This system provides for data with reference to the life and work of

the individual as well as his preliminary and professional training.

Among other items is "position held". The secretary is very anxious to get the military records of all members of the A. V. M. A., so that they can be inserted on their records in the Association. At the present this may not seem important to most members who have been, or are, in the service, but as years pass it will become of much more interest. I hope that every member of the Association who was in the service, will send a brief statement of that service with the rank held.

There are also a number of members who have held important state or federal positions. These should also be sent in for the A. V. M. A. records.

N. S. MAYO.

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Dr. A. D. Hubbel is Live Stock Inspector for San Bernardino County, California. This county covers more than twenty thousand square miles and unquestionably keeps Dr. Hubbel busy covering this territory.

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Major James A. Campbell, of the Canadian Army, has recently returned from Siberia and has been discharged from the army, resuming his practice at Toronto.

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Dr. Chas. H. Jewell has returned from France and at present is on duty in the office of the Surgeon General, Veterinary Division, Washington, D. C.

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Capt. R. A. Kelser is now at the Veterinary Laboratory of the U. S. Army at Philadelphia, Pa.

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Dr. F. M. McConnell is now practicing at Litchfield, Mich. His previous address was Cold Water, Mich.

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Dr. C. D. Bailey has moved from Kalona, Iowa, to St. Elmo, Ill.

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Dr. Arthur W. Combs is now located at East Orange, N. J.

## OTHER ASSOCIATIONS.

### UNITED STATES LIVE STOCK SANITARY ASSOCIATION.

#### TENTATIVE PROGRAM OF CHICAGO MEETING, 1919.

*Monday, December 1, 1919, 10:00 A. M.*

Roll Call.

Address of Welcome. — Hon. Frank O. Lowden, Governor of Illinois.

Response. — John R. Mohler, Washington, D. C., Chief, Bureau of Animal Industry.

Reading of Minutes.

President's Address. — George W. Dunphy, Michigan.

Report of Secretary-Treasurer.

Report of Committee on Legislation. — M. C. Cohen, Kentucky.

Report of Committee on Publication. — D. M. Campbell, Illinois.

Report of Committee on Grievances. — T. E. Munce, Pennsylvania.

Report of Committee on Tick Eradication. — E. Pegram Flower, Louisiana.

*Monday, December 1, 1919, 2:00 P. M.*

Present Status of the Live Stock Industry. — H. R. Smith, Illinois, Secretary L. S. Com. Association.

Report of Progress in Tuberculosis Control. — J. A. Kiernan, Washington, D. C., in Charge Tuberculosis Control and Eradication, B. A. I.

Tuberculosis and the Dairy Industry. — D. D. Akin, Michigan, President American Holstein-Friesian Association.

Practical Application of the Accredited Herd Plan from the Breeders' Viewpoint. — George Martin, Illinois, Field Man for the Breeders' Gazette.

Experiences of Those Who Have Taken the First Step in Tuberculosis Control or Eradication. — (Talks open to the floor, each discussion limited to ten minutes.)

Discussion.

*Tuesday, December 2, 1919, 10:00 A. M.*

Report of Committee on Hog Cholera. — A. L. Hirleman, Georgia.

Report of Progress in Hog Cholera Control. — M. Dorset, Washington, D. C. Chief, Biochemic Division, B. A. I.

Differential Diagnosis of Infectious Diseases of Swine. — (Papers by A. T. Kinsley, Missouri, and three others, to be selected and subjects assigned by Dr. Kinsley.)

*Tuesday, December 2, 1919, 2:00 P. M.*

Report of Committee on Contagious Abortion. — Ward Giltner, Michigan. Professor of Bacteriology, Michigan Agricultural College.

Subject to be Selected. — E. C. Schroeder, Maryland. In charge, Bureau of Animal Industry Experiment Station.

Discussion. — W. L. Williams, New York, New York State Veterinary College. E. T. Hallman, Michigan, Pathologist, Michigan Agricultural College.

Practical Methods of Handling Herds Affected with Abortion Disease. — John F. DeVine, New York, Editor, Department of Cattle Practice, American Journal of Veterinary Medicine.

Discussion.

*Wednesday, December 3, 1919, 10:00 A. M.*

Report of Committee on Diseases. — L. Van Es, Nebraska, Research Department, Nebraska Agricultural Experiment Station.

Report of Committee on Special Skin Diseases. — B. H. Ransom, Washington, D. C., Chief, Zoological Division, Bureau of Animal Industry.

Subject to be Selected. — Adolph Eichhorn, New York, Veterinary Director, Lederle Laboratories.

The Sheep Industry. — Frank Hegenbarth, Utah, President, National Wool Growers' Association.

Subject to be Selected. — F. R. Marshall, Washington, D. C., Animal Husbandry Division, Bureau of Animal Industry.

Hemorrhagic Septicemia in Sheep. — I. E. Newsome, Colorado, Professor of Pathology, Colorado Agricultural College.

Sheep Parasitisms. — Maurice C. Hall, Washington, D. C., Senior Zoologist, Bureau of Animal Industry.

*Wednesday, December 3, 1919, 2:00 P. M.*

Sanitation and Livestock Transportation.—J. G. Rutherford,  
Canada, Dominion Railway Commissioner.

### BUSINESS SESSION.

#### COMMITTEE REPORTS.

Finance. — D. F. Luckey, Missouri.

Credentials. — P. E. Bahsen, Georgia.

Resolutions. — J. I. Gibson, Illinois.

Delayed Reports.

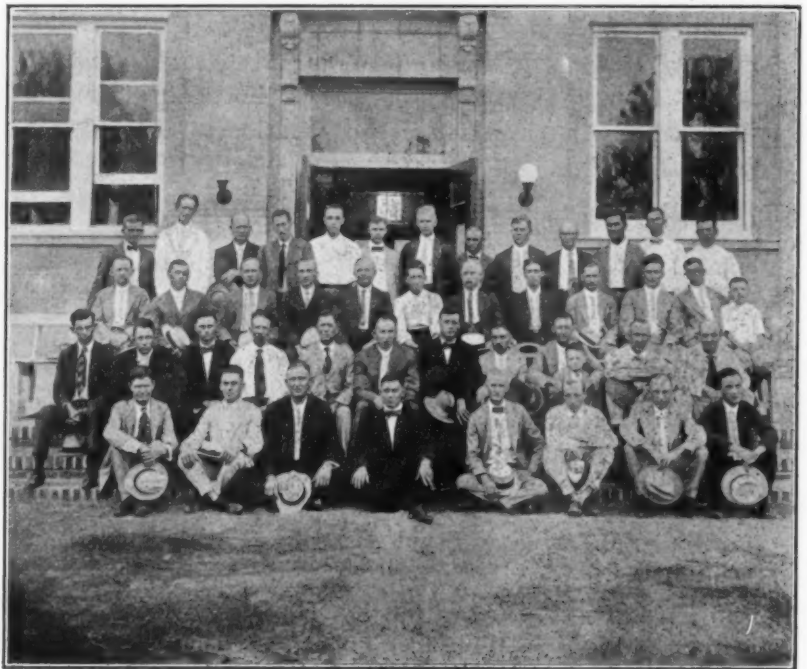
Unfinished Business.

New Business.

Election of Officers.

Appointment of Committees.

Adjournment.



TEXAS STATE VETERINARY ASSOCIATION.

Group of Members and Visitors in Front of Francis Hall, Texas A. & M. College.



A GROUP OF A. V. M. A. MEMBERS AT PEARL RIVER, N. Y.

### NEW YORK STATE VETERINARY MEDICAL ASSOCIATION.

The New York State Veterinary Medical Association which held its convention July 23rd to July 25th, in Brooklyn, included in the program a trip to Pearl River, N. Y., to visit the Lederle Antitoxin Laboratories located there. About forty

members participated in this outing, which according to the consensus of opinion was highly profitable to everyone present.

Demonstrations were given showing the preparation of the various biological products used by the veterinarians, a keen interest being especially manifested in the production of the clear anti-hog cholera serum which was demonstrated in detail from the beginning of the preparation until the finished product is obtained.

The members of the Association came and departed in a special car. The ladies who accompanied the party were treated to an automobile ride along the picturesque Hudson Drive. All departed having spent a profitable day. A vote of thanks was extended to the Laboratories for the pleasant and profitable time they had enjoyed through their courtesy.

### SASKATCHEWAN VETERINARY ASSOCIATION.

*The Journal* has obtained the following report from a recent issue of the *Regina Daily Post*.

The annual summer school of the Saskatchewan Veterinary Association was held at the University of Saskatchewan.

Dr. Charles Head and Dr. M. P. McClelland were appointed on the executive of the association. The other officers were:

Dr. J. S. Gibson, Govan, President;  
Dr. J. M. Fawcett, Saskatoon, Vice-President;  
Dr. R. G. Chasmar, Hanley, Registrar.

#### EXECUTIVE MEMBERS:

Dr. Charles Head, Regina;  
Dr. M. P. McClelland, Regina;  
Dr. H. Richards, Indian Head;  
Dr. W. Reed, Balearres.

The clinic was in charge of Major J. H. Blattenberg, United States Veterinary Corps, Lima, Ohio, who performed operations and lectured daily. Major Blattenberg spent two years in France, being connected with the Allied armies before the United States entered the war.

Dr. Elliot of Saskatoon also addressed the school; and the session was closed with brief addresses by eight members of the association who recently returned from France.

On his return from the Canadian Northwest Major Blattenberg reported an unusually pleasant meeting, and stated that

they were a wide awake and up-to-date bunch in that section of the world, and that he had enjoyed his trip up there immensely.

### **CENTRAL CANADA VETERINARY ASSOCIATION.**

The semi-annual meeting of this association was held in Ottawa on 13th and 14th August.

The members met at Howick Hall in the Exhibition Grounds at 2 p. m., on 13th August, and motored out to the Ottawa Dairy Farm, when Dr. W. L. Williams, of Ithaca, opened the clinic. Practical demonstrations of sterility in cattle were given, and operations were performed on suitable subjects.

Mr. John Bingham, Managing Director of the Ottawa Dairy Company, entertained the members and visitors in his usual pleasing manner, refreshments being served on the lawn.

The evening session convened in Howick Hall, Dr. George Hilton, the President, being in the chair.

Dr. J. W. Adams, of the University of Pennsylvania, gave an excellent address full of practical points on surgery, restraint of animals, and anæsthesia, which was very much appreciated.

The clinic was resumed at 10 a. m., on the 14th August, with Drs. Adams and Fowler operating upon varied cases, consisting principally of fistulæ, hernias and tumors. Dr. Williams also removed a tumor from the cervix of the os uteri of a cow. Much interest was manifested by the members in the operations, which were very ably performed.

In the evening the President was again in the chair, and Dr. W. L. Williams gave a very instructive address on contagious abortion.

The clinic and the meeting were well attended, among the many present being Controller Kent, of Ottawa, Dr. J. G. Rutherford, Railway Commissioner of Canada, Dr. F. Torrance, Veterinary Director-General, Dr. C. D. McGilvray, Principal of the Ontario Veterinary College, Professors Daubigny, Genereaux and Dauth, of Laval, and the Etienne Brothers, of Montreal.

During the business sessions the members discussed the very unsatisfactory status of the profession in Ontario. This was considered to be due largely to the fact that no satisfactory legislation has been passed to prevent unqualified men from practicing.

Dr. George Hilton, A. R. Metcalfe and C. M. Higginson were appointed a committee to take active measures with a view to having suitable legislation passed.

Hon. S. F. Tolmie, V. S., the recently appointed Minister of Agriculture, expressed through the President his regrets at not being able to be present owing to his absence from the city.

The following resolutions were passed unanimously:

Whereas the Prime Minister of Canada has selected Dr. S. F. Tolmie as Minister of Agriculture and

Whereas Dr. Tolmie is a leading member of the veterinary profession and

Whereas he is eminently qualified for the position by training and experience in all branches of scientific agriculture,

Therefore be it resolved that this Association hereby record its appreciation of the selection of Dr. Tolmie for this important office and convey to him its best wishes.

Whereas Dr. J. G. Rutherford, C. M. G., has been appointed a member of the Board of Railway Commissioners for Canada and

Whereas Dr. Rutherford has been a faithful member of this Association and instrumental in promoting its best interests,

Therefore be it resolved that this Association convey to Dr. Rutherford its appreciation and extend its best wishes for his future success in larger fields of national service.

Whereas the Minister of Agriculture of Ontario has announced that the Ontario Veterinary College has adopted a definite standard of Matriculation and the granting of the Degree of Bachelor of Veterinary Science by the University of Toronto and

Whereas the Association is convinced that this will insure a higher standard of veterinary qualification,

Therefore be it resolved that this Association avail itself of this opportunity to convey to the Hon. Geo. S. Henry, the Minister of Agriculture, the assurance of its appreciation of his action in arranging for a higher standard of veterinary education and qualification.

Whereas the live stock interests are a valuable factor in the economic development of the Province of Ontario, creating national prosperity and

Whereas the live stock interests are worthy of every effort being put forth to preserve them from economic losses and

Whereas the health of live stock must be preserved and skilled veterinary services provided for the prevention of losses from preventable diseases and the proper treatment of disease and

Whereas this can best be assured by qualified and properly trained veterinarians and

Whereas the registration of veterinary surgeons has been adopted and enacted by law in the other provinces of Canada as a means of maintaining a good standard of veterinary service and prohibiting quackery and

Whereas the Province of Ontario has not enacted such legislation as would safeguard the live stock interests against quackery and

Whereas the Province of Ontario is thus disparaged in comparison with the other provinces of Canada in not having adequate legislation to maintain a high standard of veterinary qualification for practice in Ontario,

Therefore be it resolved that this Association hereby request the Government of Ontario to enact legislation requiring the registration of veterinary surgeons for practice, similar to the laws now existing in the other provinces of Canada.

Whereas the Province of Ontario is maintaining the Ontario Veterinary College as an educational institution for the purpose of enabling young men to obtain scientific knowledge of veterinary science and

Whereas the course of instruction and attendance extends for a period of four academic years leading to the Degree of Bachelor of Veterinary Science conferred by the University of Toronto and

Whereas there exists in the Province of Ontario certain privately owned concerns purporting to give a course of training in veterinary science by mail, and in the short period of a few weeks' correspondence to grant so-called Diplomas and Degrees in Veterinary Science to all and sundry on payment of a fee, and

Whereas such institutions are not permitted to exist in any other province in Canada,

Therefore be it resolved that this Association express its strong disapproval of any institutions other than recognized

Universities and accredited Veterinary Colleges giving courses granting so-called Diplomas and Degrees.

GEORGE HILTON.

### ASSOCIATION OF B. A. I. VETERINARIANS.

(Metropolitan Division.)

At a meeting of the Metropolitan Division of the Bureau of Animal Industry veterinarians, New York City, on August 25, 1919, the following resolution was presented and unanimously adopted:

"This association having learned with deep satisfaction the decision of our Chief, Dr. John R. Mohler, to continue his services with the Bureau of Animal Industry,

"Resolved that we congratulate our country, the Secretary of Agriculture, and the veterinary profession of America on the spirit of sacrifice and unselfishness shown by him in this decision and that we recognize his splendid services, masterly direction of the Bureau, and great knowledge of the conservation of animal industry to be a great asset to our country during the present period of reconstruction.

"Resolved also that copies of this resolution be sent to the Chief of the Bureau and the Secretary of Agriculture."

EDWARD L. SANDER, *Secretary.*

### TICK ERADICATION IN THE SOUTH.

Status of cattle dipping for the month of August, 1919, in the following States:

Alabama . . . . .	1,016,197
Arkansas . . . . .	609,748
Florida . . . . .	223,013
Georgia . . . . .	452,110
Louisiana . . . . .	1,245,767
Mississippi . . . . .	245,572
North Carolina . . . . .	7,355
Oklahoma . . . . .	509,029
South Carolina . . . . .	148,072
Texas (North) . . . . .	1,476,144
Texas (South) . . . . .	553,496

## COMMUNICATIONS

### A CORRECTION.

In the last line of paragraph three in the communication on "Fetish Worship" by Dr. Thos. B. Rogers, in the September Journal, the term "Plain Geometry" should, necessarily, have read Plane Geometry. We offer the Doctor an apology for the oversight, and will do what we can to persuade our proof-reader to accept the blame for the error.—Ed.

### DR. BLATTENBERG DESIRES CORRESPONDENCE.

Editor, Journal:

Quite frequently I receive inquiry from veterinarians who are having trouble with the roaring operation, the chief complaint being an ossification of the larynx. I will be better able to explain the cause of this condition with more detailed information as to methods used and after care.

The idea has occurred to ask the veterinarians, both those having trouble and those having success, to write me a detailed description of their operation. This should include, preparation of the animal, restraint, anaesthesia, technique, kind of tracheotomy tube used and whether inserted in the opening into the larynx or in the trachea, whether one or both ventricles are stripped of mucosa and after care for a period of one month. What per cent of operations have not been successful?

These letters will give a chance to compare methods and will not be published, but, from these letters an article will be formulated for publication attempting to explain the cause of this condition and suggesting plans to avoid it.

This is simply a suggestion, if carried out will require some work but the results may be well worth the effort. Letters should be addressed to me at my office.

JOHN H. BLATTENBERG,  
130 South Union Street, Lima, Ohio.

Dr. L. I. Hines has moved from Holstein, Nebr., to Hastings, Nebr.

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## NECROLOGICAL.

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### DR. F. A. REICHMON.

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Dr. F. A. Reichmon, Geddes, South Dakota, died from anthrax last August. At the time of going to press *The Journal* has no further information concerning Dr. Reichmon's death. However, he was a graduate of the Chicago Veterinary College in 1910, and joined the A. V. M. A. in 1912.

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### DR. W. O. DEBOLD.

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Dr. W. O. Debold, a member of the A. V. M. A., and an inspector in the Bureau of Animal Industry in Chicago, was killed in an automobile accident in Chicago about August 10th.

Dr. Debold was a graduate of the Cincinnati Veterinary College in 1913, and joined the A. V. M. A. in 1918.

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### DR. WILLIAM J. MORGAN.

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Dr. William J. Morgan of Seaton, Illinois, died July 15th, 1919. Dr. Morgan was a graduate of the Colorado Agricultural College and of the Chicago Veterinary College. He also taught Materia Medica for a time in the veterinary school at Fort Collins, Colorado.

Dr. Morgan joined the A. V. M. A. in 1912 and was also a member of the Illinois Veterinary Association. He was a leader in his community in all lines of progress and was one of the prominent veterinary practitioners of Illinois.

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### DR. EDWARD C. ROSS.

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Dr. Edward C. Ross, D. V. S., graduate of the American Veterinary College, class '84, passed away at New Haven, Conn., August, 1919. A long and distressing illness from carcinoma of the intestines preceded his death.

Ill health had led him to retire from active practice some years before. He was unmarried.

Masonic burial services were conducted in New Haven August 17th, after which at his request his body was cremated at Pleasant Valley, New York.

He was on the honor roll of membership of the A. V. M. A. and still continued actively interested in the Connecticut State Veterinary Medical Association.

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### DR. CHAS. R. TREADWAY.

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The Journal has just received notice of the death of Dr. Chas. R. Treadway, Kansas City, Mo., formerly of Canton, Mo.

Dr. Treadway was a graduate of the Kansas City Veterinary College in the year 1905, and joined the A. V. M. A. in 1909.

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### ROYAL COMMISSIONER J. G. RUTHERFORD TO PROBE HORSE RACING IN CANADA.

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Dr. J. G. Rutherford, C. M. G., member of the Dominion Board of Railway Commissioners, has been appointed by the Federal Government, of Canada, a Royal Commissioner to conduct an inquiry into conditions pertaining to running race meetings and betting in connection therewith in Canada. His investigation will cover a wide field, and the evidence which he adduces and his report will furnish a base for legislation by the Canadian parliament. In this important appointment THE JOURNAL desires to congratulate not only Dr. Rutherford himself, but the Dominion Government and the veterinary profession as well.

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Dr. R. J. W. Briggs, formerly in charge of hog cholera work in Louisiana, has been transferred to take charge of the same work in South Dakota, with official station at Brookings.

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1st Lieut. D. D. Stroly, Class '17 of the New York State Veterinary College, New York University, has resigned from the regular Army Veterinary Service to enter private practice.

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Dr. H. N. Guilfoyle, engaged in the work of tick eradication in Louisiana, has been transferred to similar work in Texas.

## MISCELLANEOUS.

### TWO MOST EXCELLENT ARTICLES.

In the Army Pictorial Section of *The Come Back*, of July 16th, is a most excellent illustrated article on The Veterinary Corps, U. S. Army, which gives a world of information on one of the newest organizations to be formed as the result of the late war, and of whose achievements in the Medical Department the profession may feel justly proud. The majority of those who were not actively connected with the Service can have little conception of the monumental effort it required to organize our great Army Veterinary Corps. The article in question discusses, interestingly, the various branches of the work, and closes with a statement, under the subhead, Benefit by Training, regarding the field of service for applicants which the enlisted Veterinary Corps offers. Members of the profession to whom a military life in the Veterinary Service appeals, should obtain a copy of this particular issue of *The Come Back*, and read the entire article.

The other article referred to, also well illustrated, is "Making the Army Safe for the Horse," by Gerald E. Griffin, Lieut. Col. V. C., Director during the War, of the Veterinary Corps Training School, Camp Lee, Va., and published in the September number of *The National Humane Review*, Albany, N. Y. The article devotes considerable of its space to the activities of the Camp Lee Training school, and lays special stress on the "Humanitarian Influence" exerted. "It is deemed only fair at this point," says Col. Griffin, "to pay tribute to the influence for good exerted on the teaching staff of the Veterinary Corps Training School at Camp Lee, by the humane sentiments of the American Humane Association, the Red Star Animal Relief, the Animal Rescue League, and kindred organizations, and to pay special tribute to that broad-minded and warm-hearted lover of our domestic animals, Mrs. Huntington Smith, of the Animal Rescue League, Boston, Mass., who by her interest and faith in the work of the Veterinary Corps has erected unto herself a monument, in the hearts of those who served at the school at Camp Lee, that cannot die."

To the profession we also commend, highly, the perusal of this splendid article by Col. Griffin.

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### THE EQUINE HERO.

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On a great city's street, on a hot summer day,  
With the pavement below fairly melted,  
A thin looking nag wearily trudged on his way,  
As with every "Gid dap" he was belted.

"Hot weather's the stuff," the owner remarked,  
"The force that will roll in the dollars;"  
And the nag struggled on from daylight till dark,  
A gathering sores under the collars.

The hot summer sun swooped down on his brain,  
Humidity gripped at his throat;  
A massive umbrella had he with the rein,  
Most cool and serene was the bloke.

The thirst of the nag was prodigious and aye  
He felt quite akin to a goner,  
He needed more drinks than they gave him that day,  
While the driver slaked his on the corner.

With a slash of the whip of the knight o'the truck,  
And a head hanging low from the drouth;  
Mid roar of the street and swirl of the muck,  
He is jerked to a germ laden trough.

Once more the nag's urged up the sizzling street;  
Once more does the whip take its slice;  
The roadway's a baking and burning his feet  
And holding the wheels like a vise.

With sweat gushing forth and a heaving of chest,  
A cool, shady park does he skirt;  
He understands not the great silent jest:  
The "keep off the grass" on the turf.

Long after dusk the nag finished his haul;  
At last out of strife hot and dusty;  
Back to the sweltering, stifling stall,  
Back to the food that is musty.

Munching, he finds it a wearisome task;  
His bones how they ache and how sore;  
In the midst of the air like a hot furnace blast,  
Seeks rest on a hard wooden floor.

Next morning at dawn he is yanked out again,  
Strapped to a big, crushing load;  
Till high noon he toiled, this servant of men,  
Urged on by the merciless goad.

The earth seemed to tremble — a desperate lug,  
The whip had been swung for its thrust  
But a martyr had made his last faithful tug,  
When a poor stack of bones bit the dust.

EDWARD L. SANDER, D. V. S.

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#### AN EXCELLENT LETTER BY RESIDENT-SECRETARY A. D. KNOWLES OF MONTANA.

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To the Veterinarians of Montana:

The A. V. M. A. will convene in New Orleans, Louisiana, November 17-21, 1919, inclusive.

This will be the second time the association will have met in the South, and for those who may be fortunate enough to attend it will be a most inspiring event. The great big hearted hospitality of the southern people will be exercised to its capacity and every person there will be made to feel the effect of their good will.

This will mark the beginning of the reconstruction of veterinary science, following the world war, and as the A. V. M. A. has always been a leader in advancing the cause of the veterinary profession on this continent, so will she at this convention, no doubt, establish regulations and principles which will be recognized by veterinarians through all future time.

President Moore and Secretary Mayo have set about to make the New Orleans meeting the most helpful that has ever been held. The veterinarians of the Southeastern States Veterinary Medical association and the Louisiana association have organized and expect to be able to furnish better entertainment for all who attend than they ever experienced before.

Editor Dalrymple requests that original articles for publication be forwarded to him, as well as case reports and news items; the Journal of the A. V. M. A. is for the entire veterinary profession and Dr. Dalrymple requests the cooperation of all.

I will be glad to furnish application blanks for membership in the A. V. M. A., and solicit applications.

Yours very truly,

A. D. KNOWLES, Resident-Secretary.

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### **DR. WINCHESTER NEVER OVERLOOKS THE HEALTH OF HIS COMMUNITY.**

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#### **WARNING AGAINST TUBERCULOUS MILK.**

Dr. J. F. Winchester, inspector of slaughtering and cattle, calls the following article to the attention of the public of Lawrence in support of his contention as set forth in the article, "A Common and Public Nuisance — The Tubercular Cow."

The following extracts appeared in the report of the Veterinary director General (F. Torrance, B. A., D. V. S.) for the department of agriculture, Canada, in the issue of March 31st, 1918.

(Printed by order of Parliament.)

The importance of this work, the testing of cattle for Tuberculosis, to the health of a community can hardly be over-estimated, especially to the welfare of the child population. It was found by our tests that some herds were supplying milk to be consumed in the raw unpasteurized state, when most every cow in the herd was diseased. This milk must have been highly dangerous for the children drinking it, yet the parents were probably quite satisfied if its appearance and taste were all right.

Experiments have proved that young pigs fed on tuberculous milk become tuberculous to the extent of 80 per cent if they

receive only two or three feeds of it. When fed continuously on it for a month, 100 per cent became infected.

There is no reason to believe that children are not equally susceptible to the effect of consuming tuberculous milk. The results are not so evident as in the case of pigs, but far more disastrous to the human race. Much human tuberculosis comes from drinking tuberculous milk, and every effort should be made to prevent it by putting the tuberculous cow out of business.

—Lawrence (Mass,) *Daily Eagle*.

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### INTERESTING CARD FROM DR. G. A. ROBERTS, SAO PAULO, BRAZIL.

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Under date of August 1st, Dr. G. A. Roberts sends Secretary Mayo a card of interesting information from his new location at Sao Paulo, Brazil. Among other things, Dr. Roberts says: "This is a most wonderful country in beauty, novelty, and resources. I would not have missed it for anything, but I cannot give you much information yet as to my duties or prevalent diseases. However, they are putting up some beautiful buildings for Institute Veterinaria," which Dr. Roberts very graphically describes, and which suggests that that section of the Continent is alive to the importance of good men and good equipment in its effort at research along the line of animal pathology. We are sure that all Journal friends join with us in wishing Dr. Roberts every success in his new home and work.

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Dr. Edward Lapple has received his discharge from the army and is now located at Sioux City, Iowa.

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Dr. Wilbur Pierret is now with the B. A. I. at Denver, Colo. Dr. Pierret was formerly stationed at St. Joseph, Mo.

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Dr. H. C. Berger has recently been transferred in the work of Tick Eradication from Thibadoux, La., to Granbury, Texas.

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Among the recent subscribers to the JOURNAL, is Senor D. José Coya, Chief Veterinarian to His Majesty, the King of Spain.

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## CONTENTS

EDITORIAL .....	119
PAPERS, ETC.:	
How to Raise Standards in Veterinary Education—WM. N. BERG.....	125
Differential Features Between Melanosis and Melanosarcoma—S. A. GOLDBERG .....	140
The Veterinarian and The County Agent—DEAN COOPER.....	153
Typhlitis and Perityphlitis—OSCAR SCHRECK.....	158
Inspections for Interstate Movement of Live Stock—J. S. GROVE.....	164
Studies on Anthelmintics—M. C. HALL AND M. WIGDOR.....	169
Relative Potency of Tail-Bled and Carotid-Bled Anti-Hog Cholera Serum—E. A. CAHILL.....	177
Special Report on the Histo-Pathology of Glanders (Illustrations)— CAPT. HADLEIGH MARSH.....	186
CLINICAL AND CASE REPORTS:	
Enuresis—OSCAR SCHRECK.....	188
An Interesting Case—W. M. BURSON.....	189
A Study of Fecal Examinations of 1,000 Imported Dogs—MEYER WIGDOR.....	189
A Case of Spindle-Cell Sarcoma of the Skin and Subcutaneous Tis- sues—B. F. KAUFF.....	191
Investigation of the Death of Chickens: Coccidian Hepatitis—B. F. KAUFF.....	194
ABSTRACTS .....	196
ARMY VETERINARY SERVICE.....	200
ASSOCIATION NEWS:	
American Veterinary Medical Association:	
Fifty-sixth Annual of the A. V. M. A. ....	203
Officers and Committees, 1918-1919.....	204
Program .....	206
Ladies Auxiliary .....	211
Hotel Rates .....	211
Medical Delegates to the A. V. M. A. ....	212
Other Associations .....	213
NECROLOGICAL .....	228
MISCELLANEOUS .....	230

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